

# MINICAM

The Miniature Camera Monthly — For EVERYONE

HOW TO FIND AND  
TAKE GOOD PICTURES  
... first of a new series

HOW TO TONE PRINTS

"INSIDE" YOUR ENLARGER

HOME PHOTOGRAPHY  
LIGHTING SIMPLIFIED

ABSTRACTIONS IN COLOR  
MADE WITHOUT CAMERAS

HOW TO MAKE "DOUBLE-  
EXPOSURE" PORTRAITS

40 PAGE PHOTO EQUIPMENT GUIDE

156  
PAGES

NOV.

25¢



**BIRTH OF VENUS**

By **NICHOLAS HAZ, F.R.P.S.**

**NO CAMERA** is needed to make abstract or "idea" pictures. What is more, abstractions in full color, like the above, may be made without the use of color film! Separation negatives are made directly on ordinary film and the color print made from the black and white negatives. See the article in this issue by Nicholas Haz, F.R.P.S., a world authority on color abstracts, "Make Idea Pictures in Color".

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## Hard to Catch?

**W**HEN you want to get an indoor picture like this you have a job on your hands!

But such shots become easier when you use Agfa Superpan Supreme Film. Its amazing speed, fine grain and balanced contrast will give you results you'll be proud of.

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**Made by Agfa Ansco Corporation in Binghamton, N. Y., U.S.A.**

**AGFA SUPERPAN  
SUPREME FILM**



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NOVEMBER, 1939

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MONTHLY**  
WILL LANE, Editor

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## Equipment

Sirs:

All this dope about picture taking is all right, but when are you going to get down to brass tacks and dish out the "what with" angle?

Tools, that's what we want to know about. Cameras, enlargers, exposure meters, lights—these are the things pictures are made with. The trouble with most of us is that we don't know *what* tools to buy or *how* they work or *how* to use them.

CHAS. A. FIRESTONE.  
New York City.

(To reader Firestone and everyone who ever buys, sells, exchanges or uses photographic equipment, this special EQUIPMENT ISSUE will bring complete information on modern cameras, enlargers, exposure meters and cine cameras. In addition to complete COMPARATIVE listings of these products, and photographs to identify them, articles about equipment will be found beginning on pages 22, 56, 59, 108 and 149. Although the cover of this issue of MINICAM says "156 pages," last minute information on new equipment necessitated adding 8 pages to make a 164 page issue, the largest yet published.—Ed.)



# PERFEX Forty-Four

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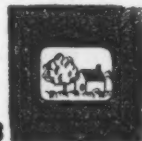
1

Place film over masked opening. Fold up gummed bottom flap to anchor film in position.



2

With film anchored in position as shown above, fold down upper half of binder and moisten gummed flaps.



3

Folding over gummed flaps as shown above completes the slide. A real time saver and surprisingly economical.



W. A. BREUER

35  
mm

## CONTRASTY SCENES are EASY with SUPERIOR PAN

Scenes with a great variation in light intensity call especially for Du Pont Superior Pan. Its long-scale gradation brings out the detail in shadows and at the same time renders the highlights with sparkling clarity. It has ample speed and wide latitude to assure you of getting a whole roll of good negatives. Its fine grain size gives critical sharpness even when greatly enlarged. Next time try a roll of this "all-purpose" film—DuPont Superior Pan.



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### Escape

Sirs:

After having been arrested by the German Gestapo in Prague and after having escaped and safely arrived in London, I am very anxious to renew our relations.

I hope you have not sent MINICAM further to my address in Prague, Czechoslovakia. Although it is pretty difficult to write now, I will make a new trial and write a column of "Snapshot Gossip about Europe."

London.

FR. WILLY FRERK.

*To Cameraman Frerk, congratulations on his successful arrival in London and on the publication there of his first book in English, "Cruising with a Camera." MINICAM readers look forward to seeing his column and hearing the inside dope on photographic conditions in war-torn Europe.—Ed.*

### "New Pair of Eyes"

Sirs:

John Hutchins has given me a new pair of eyes. From his article in MINICAM, I have learned more about lighting than from all articles and books on the subject I ever read before.

But that is the least of it. With his articles on "Photogenic" in the September and October issues, he has taught me how to look at faces. I now see faces as I never saw them before—in terms of planes, tones, and highlights. Just looking at people has become as interesting as watching a movie.

Hutchins is one of those Aces who make MINICAM indispensable to me. Give us more of him.

D. C. ALBERTSON.

San Francisco.

*(Ace Hutchins, who writes exclusively for MINICAM, interviews Bruno of Hollywood in this issue, beginning on page 18. Next month Hutchins will resume presentation of his own technique with "What is Picture Personality?" Additional MINICAM ACES scheduled for next month include Alexander King, Harry Champlin, Rolf Tietgens, Jack Price, Eliot Elisofon and Jacob Deschin, A.R.P.S.—Ed.)*

### Best Liked Advertisement

Sirs:

An orchid to the Federal Stamping and Engineering Corp., for their brilliant advertisement of three of their fine enlargers on the rear cover of October MINICAM.

The illustration presents one model in all its fineness and fitness. The brief captions give the two most important factors, the price and the quality and speed of the lens, without

using a great quantity of twobit words that have no bearing on the product.

The ad tells me what I want to know. I like it. An orchid, I repeat, to Federal.

E. J. SCHABELL.

Cold Springs, Ky.

*(And a check, \$5.00, to Mr. Schabell, for writing this month's most interesting letter commenting on MINICAM advertisements. Letters may be PRO or CON.—Ed.)*

### How Not to Do It

Sirs:

Why not present both sides of the story? Some time ago MINICAM had a swell story about how to take pictures of children. So, now, here's my story on how *not* to take 'em.

Lesson 1, the top snapshot, shows what to do if junior is camera shy. Pop applies his left knee to junior's left shoulder while



left hand holds junior's lips in a "photogenic" smile.

Lesson 3 demonstrates an easy method for making recalcitrant subjects face the camera. Note how the backlighting illuminates junior's beautiful ears!

A. E. MARSHALL.

New York City.



## Make That Christmas Screen



(Reg. U. S. Pat. Off.)

## CHALLENGER!

The Challenger can be set up instantly anywhere. (No clearing of books or bric-a-brac from tables; no confusion getting ready.) It is the only screen with square tubing in the tripod and the extension rod to hold the screen in perfect alignment. It is the only screen that can be adjusted in height by merely releasing a spring latch and lifting the extension rod. No separate adjustments of the case. For your vertical Kodachrome transparencies choose a Challenger with a square screen surface!

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**DA-LITE SCREEN CO., INC.**  
Dept. 11-M, 2723 N. Crawford Ave., Chicago, Ill.

\*Prices slightly higher on Pacific coast.

## "Photogenic"

Sirs:

Re the discussion of the word photogenic as used by Mr. John Hutchins, I believe this word was taken from the French "Photogénique."

For those who have not forgotten their French I quote from Larousse Dictionnaire the following:

**PHOTOGENIQUE.** Adj. Qui a rapport aux effets chimiques de la lumière sur certains corps. Qui impressionne bien la plaque photographique: *le bleu est très photogénique.* Qui se prête bien aux projections cinématographiques: *visage photogénique.*

*("Pertaining to the chemical effect of light on certain substances. That which affects a photographic film, thus BLUE IS VERY PHOTOGENIC. That which is well suited for motion picture projection such as a PHOTOGENIC FACE.")—Ed.)*

It looks as though this word is destined to fare as badly as the word "amateur" which also comes from the French. An amateur in France is one who devotes his or her self to a field of endeavor without actually making it a profession. While the English dictionaries give the same interpretation, an amateur here is generally thought to be unskilled.

Let's hope "photogénique" will find its rightful place in the photographic field.

DON CANADY.

Canady Sound Appliance Co.,  
Cleveland, O.

## "Let's Look Inside"

Sirs:

Although your photographic articles are "tops", I believe the main reason I've been buying MINICAM since January, 1938, is to find out what's new in the way of equipment.

In addition to cost, features, distributor, etc., I like to know how the article is constructed. In this mere photos don't always satisfy. Advertisements that show a cutaway, diagram or cross-section really satisfy my curiosity and make me a potential customer. I feel that most amateurs, like myself, have little desire for products who's inner workings are a secret.

Let's have a "look inside" of photographic products instead of a mere exterior snapshot.

JOHN KISSLING.

Chicago, Ill.

*(Thank Reader Kissling for an apt suggestion and "Let's Have a Look Inside" will be the watchword in our forthcoming series of articles beginning this month on page 22 with "Inside Your Enlarger.")—Ed.)*

# For Print Quality

## USE AN OMEGA

Users say there is nothing like an Omega Enlarger for getting prints with beautiful tonal values and unusually sharp definition. They like the scientific ventilation and efficient lighting that keep the Omega safely cool. Under normal operating conditions, condensers or negatives never heat up.

Dustless metal negative carriers; easy-to-clean double condensers. Simple, speedy operation.

● Impressive Omega Model "D" (illustrated) is equally efficient with 35 mm. and intermediate size film as with 4 x 5-inch negatives, \$175. "A" Omega for 35 mm. film, \$48. "B" Omega for film up to 2¼ x 2¼ inches, \$65. "C" Omega for film up to 3¼ x 3¼ inches, \$97.50. All fully guaranteed. Prices slightly higher west of Rockies.

Write to Simmon Bros., enlarger specialists, for advice with your enlarging problem. Send for folder G.

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# OMEGA ENLARGERS

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**COMING!**  
Look for announcement in next issue.  
**NEW SUPER OMEGA "B"**  
On sale Dec. 1





# Superpan PANNING

By J. H. SAMMIS

**FASHION NOTES:** We hear the jury in one salon wore white gloves. We know of another where a juryman wore rubber heels—he left his print on one of our mounts.

**YOU SAY THE NICEST THINGS DEPT.:** "You certainly mount them nice!"

**SAY IT AND DUCK:** "Glad to METOL you people."

**VERSATILE WORD:**

Fast { lens  
shutter speed  
dye  
diet  
set

**WARNING:** Don't glycerine your prints if you expect rubber cement to hold them.

**SOMETIMES FORGOTTEN:** You can't filter unless you have something to filter. You can't separate a white cloud in a practically white sky any more than you could a white cardboard against a white sheet, with a yellow filter. Yellow filters are intended to hold back blue and not to perform miracles.

**DEFINITION:** Trimming — something that's always a possibility in camera swapping.

**DEFINITION:** Characteristic curve—(see *Police Gazette*).

**RESTRAINER:** Draught in the pocketbook.

**LOCAL REDUCTION:** What happens to one's purse in the hometown camshop.

**ADVICE TO THE CAMERA-LORN DEPT.:** Dear Miss Pix,

My new boy friend never wants to do anything but work in the darkroom. Is it all right for me to work there with him?

Dubious.

Dear Dubious,

O. K. if he has a safe-light in his eyes.

Dorothy.

**ONLY . . . DAYS BEFORE XMAS:** You'd better start making those Christmas cards you've been talking about since last year (see p. 52).



*Ask any  
man  
WHO USES A  
G-E METER*

**ASK** him why he likes his G-E exposure meter.

Then get ready to want one yourself, because you'll hear facts about the G-E meter that you can't resist. It's a test you'll want to make before you select *any* exposure meter.

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Please send a copy of *Film Values for Use with the General Electric Exposure Meter.*

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480-146

# Behind the NEWS CAMERA

By A. J. EZICKSON

**A**RE Nazi propaganda men writing with tongues in their cheeks and with contempt for readers at home as well as abroad?



"TEARS of deliverance. The horrors suffered from the Polish terror were reflected even more clearly in the faces of the Germans when they met the Fuehrer."

The news picture above with its official caption released by the propaganda ministry, shows Hitler on the Polish front presumably being welcomed with cheers of deliverance. But the heads of civilian man, woman, and child are turned away from the Fuehrer with sharp looks of pain. There are smirks on the faces of two of Hitler's bodyguard.

Is this a case in which the camera wouldn't lie?

Amateur photographers are getting a break these days, a reminder of World War I when some of the best pictures of the conflict were snared by snaphooters. Gene Fennel and Mort Shepard, Jr., passengers aboard the American freighter Wacosta, secured prize news shots of the German submarine which stopped the freighter in mid-Atlantic. Fennel "shot" the sub through a porthole and also from the freighter's deck. Shepard bagged a honey of the U-boat and a lifeboat heading back to the Wacosta after returning the boarding party to the submarine. Several passengers tried to take pictures of the U-boat's crew when they boarded the Wacosta to search the ship but hands went sharply to pistol holsters, and the passengers forgot they had cameras. Shepard and Fennel were amply rewarded for theirs,

besides the pleasure of seeing their pix published in New York newspapers, and syndicated the world over.

G. V. Dillenback, Jr., Wide World Wired Photo technician, had been given instructions to transmit to the New York Times the outstanding shots of the U. S. Army maneuvers at Plattsburg. The films had been developed in a makeshift darkroom in one of the barracks. The weather was humid. A hairbrush dryer had little effect on them. Deadline time for the Times' first edition was nearing. Dillenback then opened the hood of his car, started the motor and strung lines over the running motor. The wet negatives were hung from the lines, and in a few minutes the warm draught had dried the negatives completely. Prints were quickly made in the portable printer, put on the drums and wired to New York in plenty of time for the Times' first edition.

The charge of the light brigade was nothing to what Ernest Sisto, Wide World cameraman, and Thomas Sande, Associated Press staffer, experienced at the Plattsburg, N. Y., U. S. Army maneuvers. The officer in charge of a calvary detachment obliged the news aces' requests for some realistic action shots. Horses came charging down on the camera, with the riders brandishing their guns.

However, straight ahead and to the right of the cameraman were other cavalry outfits. Their riders thought they were to be in the picture, too, and so charged along with the others. Down they bore on the startled cameramen, sweeping past them and missing them only by inches.

Apropos the heated debates that are going on here and abroad concerning the apparent lack of Allied pictures and the plethora of those released by the Nazi censor, Jacques de Lacretelle, famous French novelist, stated in an interview here: "Why don't we have more news and pictures from the French front? Why? Because my people have no interest in the glory of war. We don't go to the front with a camera. We feel too deeply. It is too horrible even to talk of."

LENSMAN Sisto is shown in one shot in a perilous position while photographing the lifting of the middle span of New York's Triboro Bridge.





### *Xmas Gifts...*

buying presents no problems now for if it's a gift to please a camera-fan—Give an F-R Roll Film Developing Outfit. Containing just the equipment every camera-user wants to own—it is photography's first original CHRISTMAS GIFT. Colorfully packed in a strikingly brilliant box tied with a special Xmas gift band. And... no matter how many you buy you'll keep one for yourself—for you'll like it that much.

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Here in one compact unit are the essentials for fine grain developing. The F-R "SPECIAL", versatile developing tank—adjustable to roll films of all the popular sizes; X-33, remarkable Thermolecular Fine Grain Developer; FIXOL—Concentrated Fixing-Hardening Solution; 2 SPRING FILM CLIPS and an INSTRUCTION BOOK containing information about the complete process of developing. See it at photography stores and in photographic departments of stores the country over. Buy it—if you want to get the most fun out of photography—by "Doing Your Own Developing".

## **\$2<sup>95</sup> AT PHOTOGRAPHY'S BEST VALUE!**

Singly each of these products is "tops" in its field — together in this F-R Roll Film Developing Outfit they represent photography's best "buy". For these are the famous F-R Products that are turning more and more camera-users into camera-fans daily. And because thousands of camera-users are buying more F-R Products every day — the quality is the finest — yet the price among the lowest.

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**F-R "SPECIAL"** — adjustable to all sizes • uses less solution • chemically resistant Bakelite • new loading features • patented check stop.

**X-33, Thermolecular Fine Grain Developer** — extremely fine grain • 65 to 85 Fahr. developing range • fog free long scale gradation.

**2 SPRING FILM CLIPS**

**INSTRUCTION BOOKLET**

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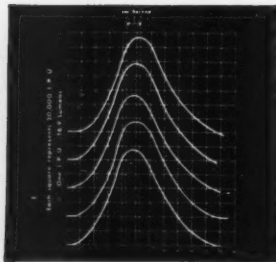
It's A "Snap"  
WITH SUPERFLASH!



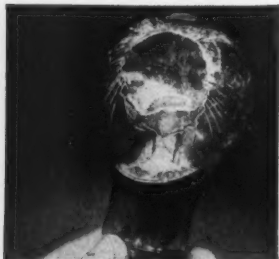
## THE FLASH YOU CAN DEPEND ON!

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# WABASH SUPERFLASH SUPERFLOOD



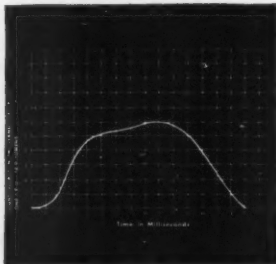
● **SPLIT-SECOND SYNCHRONIZATION** and controlled uniformity of Superflash bulbs are shown by photometer flash test of 5 Superflash bulbs, charted above!



● NEW INVISIBLE SAFETY JACKETS *prevented this Superflash from bursting, exploding or shattering when thrown full force against a stone wall!*



● **PATENTED BLUE SAFETY SPOT** gives visible check upon the safety-to-use of every Superflash bulb before you buy...before you use it!



● **EXTRA LONG PEAK LIGHT FLASH** makes possible perfectly synchronized shots at all camera speeds even when shutter or synchronizer may be "off"!



MAKE a picture record of your city for the community's benefit as well as your own.

*How to*

## FIND GOOD PICTURES

Secret No. 1 is learning how to see the things around you "for the first time."

THERE are good picture possibilities all around you. Sounds obvious, doesn't it? But true. You may be overlooking a masterpiece within the reach of your arm. Cast your eye about you, and there may be scores of

By LEO NEJELSKI



added masterpieces within the area you can see.

Many people make the mistake of going long distances in search of picture material. Yet there are probably more salon subjects within short distances of home than one can exhaust or use up in years. Even within the walls of your own home are countless opportunities for pictures.

Outstanding pictures are not restricted by geographical areas. The restrictions are within ourselves, within our minds.


Our greatest weaknesses are our habits. The habit of seeing is no exception. We become so accustomed to seeing the people and things immediately about us that we fail to notice the beauty and interest inherent in them. We often fail to respond to things immediately about us because our sense of perception becomes dulled through constant and repeated seeing.

Can you remember what you saw on your way home from work? Can you describe accurately the objects in the room where you sit most frequently?

THE FRESH EYE finds new beauties in even such everyday things as a new garden or an old house.



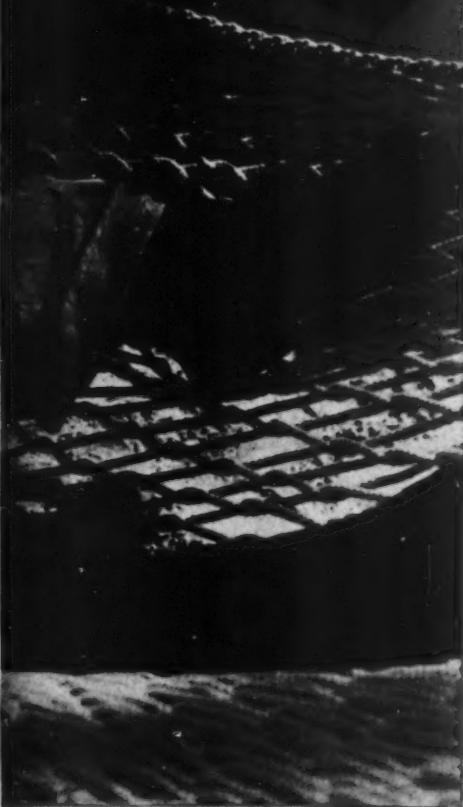




LOOK FOR wet surfaces when the sun comes out after a rain. Shooting toward the sun records the glitter. The shadow of the pole cast on the camera, here protected the lens from reflections. Contax 116, 1/25th second. By Arni.



BEGIN to see pictures where you used to pass them by. Catalogue your home, neighborhood or office and then use your camera to see how many pictures you can get in a single day.



I am certain that an alert person coming into the room where I am writing would notice many things to which I have become accustomed and find in them new interest. I take these same things for granted because I have become accustomed to them. On the other hand, whenever I see something or some city or country for the first time I am keenly alert and wide awake not to miss any of the strange, new and interesting people and things about me.

In the phrase, "seeing for the first time," is the entire secret of finding outstanding pictures. When one does not see everything as though for the first time, he is apt to travel abnormal distances and to spend an unreasonable period of time searching for pictures and actually pass by hundreds of outstanding possibilities.

A fresh eye and patience can find new beauties even in the most *over-worked* subjects. Didn't Valentino Sarra create one of his earliest photographic masterpieces out of a pair of old, wornout shoes?

A fresh eye and patience likewise can find vital and interesting pictures in even such commonplace events as reading a newspaper, beating eggs, sprinkling a lawn, digging a new garden, carrying out ashes, window shopping.

As a start on this problem of finding good pictures, let us begin on the room where you are seated. Let us assume it is the living room. Let us assume also that its principal objects are a piano, a fireplace, a desk, several chairs, etc.

First of all, what activities take place at that piano? Remember the day Johnny took his first music lesson? Remember how he hated to practice? Remember when sister Sue's boy friend and she sang duets? Remember how touched you were by the sight of Granny's gnarled hands as they sought to recapture her old-

(Page 120, please)



SIMPLICITY is one of the aces Bruno keeps up his sleeve for subjects like this. A single 500-watt spotlight overhead and to the side does the trick. Notice the brilliance with which skin and hair are rendered and the dramatic emphasis on eyes and lips. Defender X-F film,  $f/11$ ,  $\frac{1}{2}$  second. Title, "Medusa."

# 10 DO'S and DONT'S

**Bruno of Hollywood describes the secrets of his lighting methods to the ace pictorialist of the year**

**By JOHN HUTCHINS, A. R. P. S.**

**B**RUNO of Hollywood grew up with the motion picture industry, and a continual parade of new talent discoveries and screen aspirants now pass daily through his New York studio. The theatrical celebrities he has photographed include Clark Gable, Joan Bennett, Virginia Bruce, Lola Lane and many other famous names of stage and radio.

Asked for "inside dope" on his lighting methods, Bruno finally agreed to "give out," and outlined the following pointers as the result of his careful study of amateur work in pictorial salons and publications:

1. *Don't* light subjects entirely from the front. The average amateur portrait is inclined to be flat. In many of the exhibitions the lighting is almost all on the front of the sitter.

Use more back and side lighting. About two-thirds of your entire light set-up should be on the back and sides. Employ only about one-third on the front. Point up highlights on the hair and shoulders or side of the face by using a pick-up light behind the sitter. The pick-up (a small spotlight) is invaluable for creating an illusion of third dimension. Learn how to use a pick-up spot by studying movie close-ups. In every grade A picture you will find certain spots where quite

unconventional pick-up lighting is employed. Do not be afraid of getting some contrast. It is much better to light a portrait a little too contrasty than too flat. Flat lighting literally pushes the sitter away and merges him into the background. Highlights striking the side of the face or hair snap the subject forward and away from the background.

2. Never use *one* light close to the camera and pointing directly at the subject. This is *perfect flat-lighting*. An almost complete lack of modeling will be the inevitable result. If you own only one light, employ it in the 45-degree angle position. Most amateurs are also inclined to use a single light too close to the sitter. They wish to get brilliance of print quality and only succeed in "flattening out" the final print by bringing a single light too close at the time of making the exposure. Let this one light fall evenly and softly on the subject



**BRUNO AT WORK** (right), is characteristically the least obtrusive man in the studio, whether the subject is a single portrait sitter or an army of stage Hussars demanding a virile, dramatic publicity picture with "punch."

from somewhere near the 45-degree position.

A very badly flat-lighted exhibition picture may get by as an interesting photograph simply because the camera man caught some fleeting expression that holds attention. However, such a picture would have been a masterpiece if it had been lighted properly, with a little back-lighting to give brilliance. The captured expression would have been greatly intensified with good lighting.

3. *Don't* place two photo-floods on opposite sides and close to the camera, like an automobile's headlights. If you are using two lights, one should be in the 45-degree position and the other on the opposite side of the camera and far

enough back to properly illuminate the shadow side.

4. *Don't* cross your lights. If lights are placed one on each side of the sitter, and at the 45-degree position, you generally will get cross shadows on each side of the nose. Cross shadows are close friends of distortion. If you have three lights, place one at the 45-degree position as described before, another on the opposite side of the camera and well back of the camera for the shadow side. Use the third light on the background. Light the background as a separate unit.

5. *Don't* use a spotlight too close to the sitter. The new Hollywood-type of large, diffused spotlight is grand for a main light source, but if these lights are used too

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MYSTERY is the precious ingredient obtained by daring to pose a model with eyes closed (left).

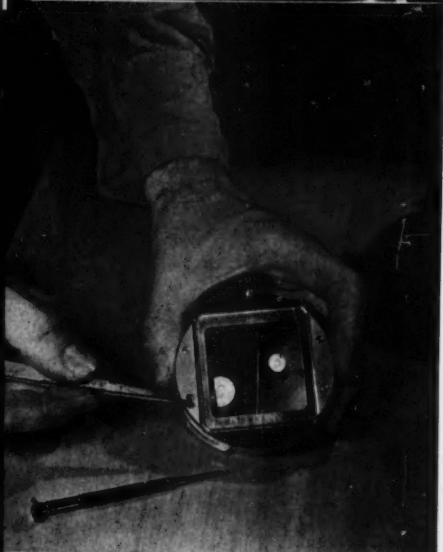
⇒  
EMPHASIS on the woman's figure and subjugation of the man's personality are obtained by permitting him to fade like a ghost into the black background. Only the man's directed attention remains on the center of interest—the woman.







THE ENLARGER'S objective lens which forms an image of the negative on the sensitized paper. The lens shown is focused by means of a helical screw, one of the two commonest methods. The other focusing arrangement consists of a bellows and rack and pinion, and operates like a bellows-type camera.



GLASS pressure plate of Zeiss Magniphot enlarger. It rests against a square piece of sheet metal bent to act as a spring.



THE enlarging process is the heart of modern photography. Learn how to make good enlargements, or projection prints as they are called, and you are well on the way to successful picture-making.

An enlarger is essentially a camera that works backwards. Film and lens are in the same relative positions as in a camera, but the light travels in the opposite direction. The sensitive paper replaces the

GLASSLESS film holder used in a 4x5 inch enlarger. The metal masks hold  $3\frac{1}{4}$ " x  $4\frac{1}{4}$ " negative (below).



# Your ENLARGER

scene photographed and, after proper processing, becomes a reproduction of that scene.

The enlarger is essentially a camera acting as a projector. Understanding how an enlarger works makes it easy to know how to select one and how to operate it in your home darkroom.

**Light Source.** In order to make it possible for an enlarger lens to form an image of the negative on the sensitized paper, it is necessary for the negative to be illuminated adequately and evenly. Although daylight, gas light, acetylene flames, arc lamps and high-intensity incandescent projection lamps have been, and still are, being employed for illumination, the majority of enlargers offered to the amateur market today use an incandescent (Mazda) lamp whose bulb is made of opal glass or treated with a coating to diffuse the light.

**Light Diffusers.** In some enlargers, particularly the condenser types so widely used a generation or so ago, there is no diffusion. A concentrated-filament, incandescent lamp or an arc lamp furnishes the light. Its rays are collected by a condenser

usually made of two plano-convex (flat on one side, curved up on the other) lenses larger in diameter than the negative. The curved sides of the two condenser lenses face each other. This condenser focuses the image of the light source in the diaphragm of the objective (camera) lens used to form an image of the negative on the enlarging paper. Such enlargers are very efficient because they give a high intensity of illumination when it is required; and they provide the maximum sharpness of image. The writer has such an enlarger, using a 500-watt, T-20 projection lamp, that will make an 8 x 10-inch enlargement on Azo or similar contact paper from a 2¼ x 3¼-inch negative in 4 or 5 seconds.

However, such condenser enlargers have gone out of popularity for several reasons. Their optical system is such that every time the picture size is to be changed, the distance of the lamp from the condenser lens has to be adjusted, in addition to the usual focusing adjustments. Perhaps the greatest drawback is that prints made with such an enlarger emphasize surface scratches and film grain. Also, the

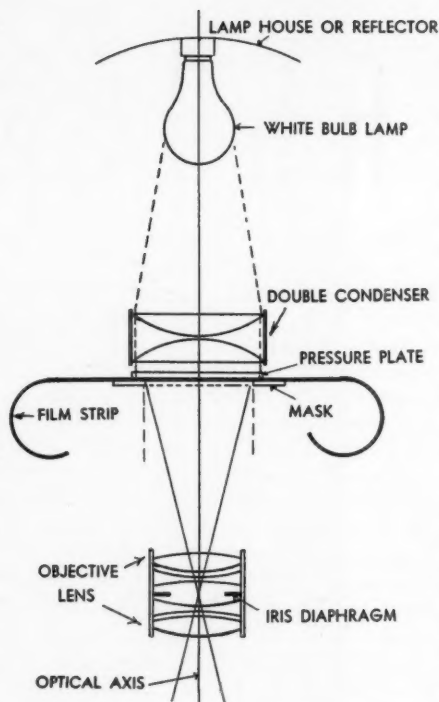
A TYPICAL enlarging paper holder, easel or masking frame, with adjustable masking strips.

DIMMER control (right). It is essentially a variable rheostat with pointer and scale.

By WALTER E. BURTON

Illustrated by the Author





PRINCIPAL parts of a typical Vertical Enlarger.

optical system tends to increase the contrast of the negative, blocking highlights and over-exposing shadows.

The condenser enlargers you read about today and see in the stores are quite a different type. Instead of a clear, concentrated-filament lamp, there is an opal-glass or similar lamp. Or if a clear-glass bulb is used, a sheet of opal glass or other diffusing medium is placed below it to spread or diffuse the light. The condensers form an image of this large light area in the direction of the objective lens, but the nature of the illumination, being no longer a converging beam, is such that grain and surface scratches are minimized. The illumination is a condensing and diffusing combination. Also, there is no longer any necessity of adjusting the lamp-to-condenser distance, as is necessary with a condenser-only system, once it has been set (by manufacturer) for even illumination.

You will find enlargers having con-

densers made up of one, two or even three lenses. The chief difference is that a single-lens condenser is cheaper to make and covers a somewhat smaller area with even illumination than a double or triple lens combination of the same diameter.

In the condenserless class of enlargers (called diffusion type), diffusion of the light uniformly over the negative is accomplished by placing a sheet of ground glass or flashed-opal glass between the light source and negative. This construction is employed in some of the large professional machines. The ground glass is very much like that used as a focusing screen on a view camera or a reflex. However, it may be ground more in the center than toward the edges, to smooth out a central "hot spot" of light. Flashed-opal glass is white, milk-like in appearance, and is an excellent diffuser. Also, it is an excellent absorber of light, and transmits only a fraction of that falling on it. Either a clear-glass lamp or one having a diffusion bulb is used with condenserless diffusion enlargers. Usually it is the second kind.

There is some difference in the degree of contrast of prints from a given negative on the same grade of paper, with different types of enlarger diffusion. Opal-glass produces a measurable softening of detail. Ground-glass diffusion generally is somewhat more snappy because of less softening. The old-fashioned, converging-beam condenser system, as explained, gives the most sharpness and contrast. The combination of a diffusion-type lamp bulb and condensing lenses gives perhaps the most satisfactory all-around contrast, there being enough softening effect to subdue blemishes and grain, but not enough to cause appreciable loss of sharpness.

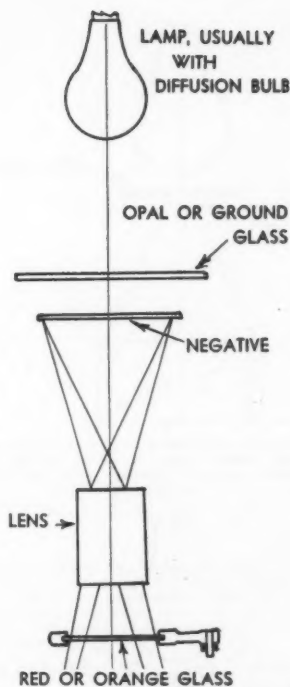
**Negative Carriers.** These are devices for holding the negative reasonably flat and perpendicular to the optical axis of the objective lens. They come in a variety of forms. One of the commonest consists of two pieces of glass between which the film is sandwiched. The glass may be hinged along one edge to produce the "book type" of holder; or it may be held

in a wooden or metal frame.

There is an increasing tendency to employ glassless negative holders. These consist essentially of two flat pieces of metal with coinciding openings the size of the negative, arranged so they can be clamped together with the negative between. The advantage is that dust particles and scratches likely to collect on glass are eliminated; and Newton's rings, which are caused by interference of light waves reflected from two surfaces very close together, are avoided. Newton's rings show as alternate dark and light bands on a print, sometimes looking like a finger-print.

**Pressure Plates.** Enlargers are often built with a pressure plate whose purpose is to press the film tightly against a sheet of glass or a metal mask. The plate is mounted immediately below the condensing lens. It rests on springs, and has a lever or handle for forcing it against the film and locking it there. The purpose of this arrangement is to hold the film flat. Newton's rings occurring between such a pressure plate and the shiny side of a negative can be eliminated by inserting a thin paper mask between the two surfaces.

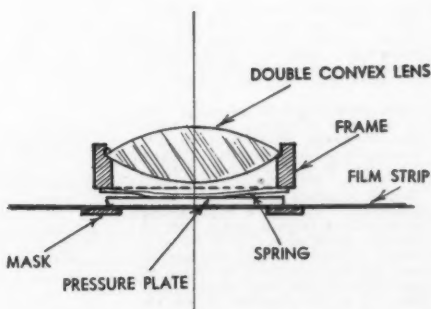
**Objective Lens.** This is the "enlarging lens" as distinguished from the condenser or condensing lenses. Its purpose is to form an image of the negative on



DIFFUSION enlarger using ground-glass or flashed opal glass to distribute light evenly over negative. The red safety screen or filter permits focusing on sensitized paper without exposing it.

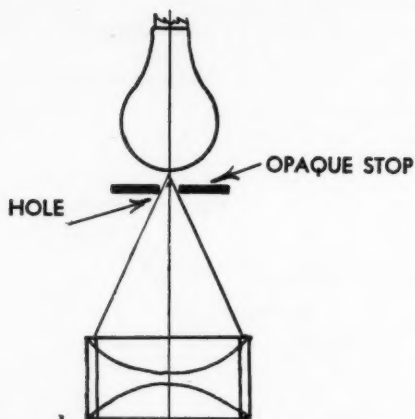


A TYPICAL single-lens condenser in a miniature enlarger, showing glass pressure plate and metal mask—

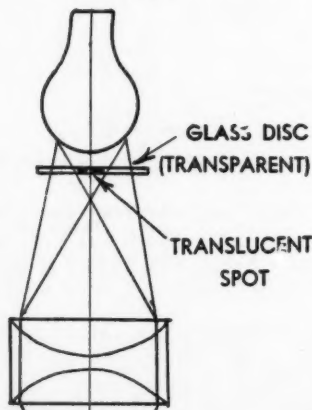


the enlarging paper. Many photographers are of the opinion that any old lens will do for an enlarger. In this they are sadly wrong. The enlarging objective should be a well-corrected anastigmat, preferably one designed for the purpose, although any good camera lens of proper focal length can be used. The focal length should be about 2 inches for 35mm. negatives; 3 inches for negatives 2½ inches long. Speed is not always of prime importance. For all-around work, *f*4.5 and even *f*6.3 is adequate. The main advantage of greater speed is to make it easier to see the image while focusing.

**Lens Stop or Diaphragm.** Enlarging lenses, like camera lenses, are equipped with iris diaphragms to regulate the diameter of the hole through which light passes. Since the object being focused (the negative) is all in one plane, a well-



USE of opaque stop with central hole, to increase contrast. The optical system is similar to that of converging-beam condenser enlarger in the use of a point source of light.



USE of translucent central stop to decrease contrast. Light reaches condenser from an infinite number of points around center.

corrected enlarging anastigmat can be used wide-open. This may surprise some darkroom artists who think they have to stop down to  $f/3.2$  for sharpness. Most photographic lenses having a speed greater than  $f/6.3$  will gain in sharpness if stopped down somewhat. For instance, a certain  $f/2.5$  lens has its maximum sharpness around  $f/6.3$  (called the critical aperture). Beyond that no gain in sharpness is obtained by stopping down.

Other reasons for stopping down are to enable longer exposures to be given, a useful stunt when doing a lot of dodging

or shading of portions of the image; and to increase depth of focus to counteract negative curling or to make the image sharp all over when the sensitive paper is tilted to correct the negative's perspective.

**Masks.** It is not a good idea to let a lot of stray light pass through an enlarger, and so masking of the negative is a desirable practice. The mask may be any of several forms. A sheet of metal having an opening the size of the negative to be included, is often used. Similar masks of paper are common. Some enlargers have masks with adjustable sides, so the area of the negative exposed can be varied. Still another way of masking a negative is to stick strips of scotch paper tape across it. These can be removed without damage to the negative. Further masking of the image usually occurs at the paper-holder or easel.

**Paper Holders.** Enlargers generally come equipped with a wood or metal baseboard that is parallel to the plane of the negative. Some kind of a paper-holder is employed to support the sensitized paper. There generally is a white surface on which the image can be focused. The most popular paper-holders have adjustable metal strips for controlling the size and shape of the picture and of the white borders.

**Safety Screen.** This is a red or orange filter of glass or other transparent material, arranged so that it can be swung into the light beam or out of it as desired. When in the beam, the image of the negative can be projected on sensitized paper

#### COMMON LIGHT SOURCES FOR ENLARGING

INCANDESCENT lamp with an opal-glass bulb or one coated with a special material having high diffusing properties. NOT an inside-frosted household lamp. Available in photo-flood and "long-life" types.



CONCENTRATED type of source such as the T-20 projection lamp, 1,000-watt, illustrated. Used in older type, converging-beam condenser enlargers (also used in spot and flood lights).



THIS is a system employing a small point-source such as a high-wattage automobile headlamp, and a disc of opal or similar glass near it, for providing diffusion. A condenser placed near the negative forms an image of the diffusing disc (not of the lamp filament) in the direction of the enlarging (objective) lens.



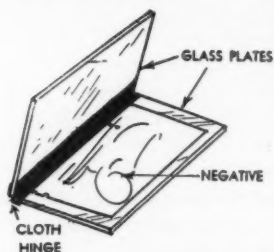


without affecting it. It is useful when arranging the paper or doing multiple printing such as adding clouds from one negative to the cloudless sky of a scene from another negative.

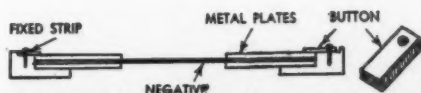
**Diffusion Attachment.** The diffusion in this case is not the same as that involved in arranging the negative illuminating system. It refers to the softening of the detail of, say, a portrait, by placing something in front of the objective lens to interfere with the light rays. Glass discs with ridges on them, fine-mesh wire screen; thin, open-weave cloth, and transparent cellulose film slightly crumpled are some of the things used as diffusion auxiliaries.

**Dimmer Control.** A handy attachment for any enlarger is a dimmer control, and it is doubly desirable when a high-intensity lamp such as a photoflood is used. This auxiliary may be a variable rheostat, with a pointer moving around a scale. It enables the brightness of the light to be varied, and permits focusing without overheating the lamp house when a photoflood is used. When turned far down, the rheostat dims the lamp to such an extent that the light becomes distinctly yellow, and this has the effect of increasing negative contrast.

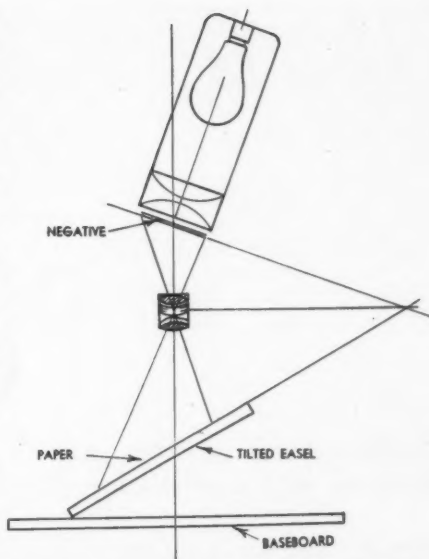
**Automatic Timer.** Another useful



"BOOK TYPE" negative holder made of two hinged glass plates.



"GLASSLESS" film holder consists of two metal masks held in a wood or metal frame. Many enlargers (such as the Zeiss and Leitz) use no separate holder, but the film is inserted into a slot and a pressure plate brought down on it.



**CORRECTING PERSPECTIVE.** Some enlargers (such as the Reja IIIa) are made so that the negative can be tilted one way or the other with respect to the lens. This enables false perspective to be corrected fully, as shown. Paper must, of course, be tilted too.

auxiliary, particularly when numerous duplicate prints are being made from one negative, is an automatic timer that turns the enlarger off after a definite time interval. Usually the timer consists of a clockwork controlling a switch, and is calibrated in seconds. Electronic timers, using tubes similar to those in radios, are also made.

**Copy Attachments.** Almost every enlarger can be used as a copying camera by placing an unexposed film or plate in the negative carrier and using the objective lens to form on it the image of a typewritten page, book page or other matter resting on the baseboard. Of course, extraneous light must be kept from the film, and illumination must be provided for the material being copied. For some enlargers, special film holders that fit into the slot or recess normally occupied by the negative can be obtained.

Focusing for copying is done by putting, first, an ordinary negative the same size as the copy image desired, in the enlarger, and projecting its image over the area to

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# How to Make

## "DOUBLE EXPOSURE"

By JACOB DESCHIN, A. R. P. S.

*Illustrated by the Author*

# PORTRAITS

**Combine the various moods and parts of your subjects. Portray personalities with this simple montage method**

THE ordinary photograph presents but a single fleeting expression of the many moods which go into the makeup of every person. Small wonder, then, that the montage portrait is the logical vehicle for furnishing a complete, rounded picture of a personality's multitudinous feelings, thoughts, expressions and activities.

There are two general methods. The montage portrait may be composed of several portrait images on a single film. A black background then is used and a number of exposures are made in different parts of each film. This method limits the work entirely to portraiture indoors by artificial light, usually spotlighting. It is the "double exposure" method. When more than two exposures are made on one film it is "multiple exposure."

The better method is to take a number of separate negatives and project them in-

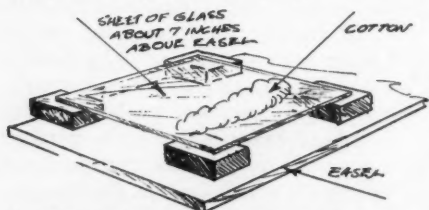
dividually on one sheet of photographic paper. This is the "multiple printing" method.

A montage portrait is not a cutting and pasting proposition but a juxtaposing of several images so that they seem, as nearly as possible with their different lighting and backgrounds, to merge into each other.

Diffusion of the edges of the several images may easily be accomplished by setting up a plain sheet of glass seven inches or so above the easel, supported at the four corners with wood blocks or other handy supports. Cotton wool is drawn out into a "rope" of cotton, and arranged on the glass where it may be molded and curved until the image to be projected has been suitably "framed" away from the rest of the negative. The parts of the sensitized paper not being exposed are covered with black paper.

One of the principal things to worry about is a satisfactory matching of the tones of the several projected images. This is done by making preliminary test exposures of the negatives, projecting each to the size desired for the final montage. Keep a careful record of the lens opening and exposure time for each negative.

The first step in the montage is projecting the selected negatives experimentally



A PIECE of glass supported over the print in the enlarger easel holds tufts of cotton to diffuse the edges of the images.



A MONTAGE is not a "pasteup" but a blending of several images in the enlarging process into one multiple portrait like the above. A valuable aid for montage work is the new Argus Jig-A-Mat, which can be used with any enlarger.

in order to determine the area of the individual negative that it is desired to project and the space it is to occupy in the montage. Mark these areas off on a plain white sheet of paper placed in the easel and with identifying numbers.

Next, with this guide sheet in the easel, project the first image in its place, guided by the marked lines. "Frame" it with the cotton "rope" or "ropes" and cover the rest of the glass with black paper. Remove the guide sheet, replace with sensitized paper, and project for the exposure time previously determined. Remove the paper from the easel, and place

in a drawer or box. That completes the first image. Replace the marked guide sheet, project the second negative image, mask as before with cotton and black paper, turn off the light, remove the guide sheet, replace it with the sensitive paper, expose the second image, and put the exposed paper away again in a light proof box.

Continue in this way until as many images as desired have been successively projected and exposed. Then develop the print.

For the most satisfactory merging of image edges, overlap the marked lines on the guide sheet slightly in "framing" for



CHILD MOODS. One shot is seldom enough to picture the ever changing moods of active childhood, but three snapshots, like the above, can make a print that will be remembered.

the exposures. The degree to which this overlapping will be apparent in the final montage will depend, to some extent, on the general tone area of the adjoining negative images. In this respect, the montage portrait reproduced here, "Smile Symphony" is more successful than

#### "Child Moods."

The final result, naturally, cannot be observed until all the exposures have been made and the print developed. If the exposures are properly matched in the preliminary stage and accurately followed in  
(Page 125, please)



**SMILE SYMPHONY.** Seen individually, the above are just three more snapshots of a smiling young woman. Combined as below, the negatives make a dramatic composition. Anyone with an enlarger can make montage portraits. It is not even necessary to take new pictures as negatives out of your file can be treated in this way.

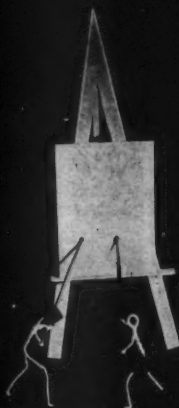




Two members of the chemical crew drag in an artist's easel and set it up. Fig. 1.



Then they bring in a sheet of exposed photographic paper and set it up on the easel. Fig. 2.



Metal, in shorts, and Hydroquinone, wearing a high hat, go to work on the exposed sheet. Fig. 3.



Sodium Carbonate applies his whip, accelerating their activity. The image is beginning to appear. Fig. 4.



Sodium Sulphite, on the ladder, inspects the job, making sure that development is thorough. Fig. 5.



Potassium Bromide, standing on the easel with a square, lays out the patterns and forbids the darkening of white areas. Fig. 6.



Development is complete, so Short Stop ousts the workers. Fig. 7.



A quick rinse by Willie Water washes the chemical crew out. Fig. 8.



Hypo then goes to work shovelling up the unexposed silver. Fig. 9.



## Behind the Scenes

# IN A DEVELOPING TRAY

**Five little men, and their assistants graphically illustrate the chemistry of development**

By VICTOR H. WASSON

*Illustrated by the Author*

**"SENSITIZED"** paper is paper stock coated with gelatin emulsion in which are suspended particles of a silver salt such as silver bromide or silver chloride. When the paper is exposed to light, a latent image is formed. The latent image cannot be seen nor is its nature known. All that is known is that the silver salt has been affected by the light.

After exposure to light, the paper is developed in a mixture of chemicals dissolved in water. This developer solution reduces the silver salt to metallic silver. A typical developer contains the chemicals called metol, hydroquinone, sodium carbonate, sodium sulphite, and potassium bromide. Each of these plays an individual part in the drama of development.

The metol and hydroquinone do the actual work of reducing the silver salt, silver bromide let us say, to plain silver. This process proceeds in proportion to the amount of light which has affected the silver bromide. Those portions of the print which have been exposed to the most light, have the most silver grains deposited, making those portions of the print the darkest.

*Metol* and *Hydroquinone* are used in combination because of the differences in their action. Metol causes the entire image to appear quickly on the paper, then slowly

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Alum with hammer, and Acetic Acid swinging the sledge help Hypo by pounding a tough surface on the emulsion. Fig. 10.

Willie Water returns to rid the print of Hypo and his helpers. Fig. 11.





"SAILING HOME." Shot at 1/250th of a second, f8. S. S. Pan film, yellow filter. Taken at La Jolla, Calif.

"WHOA." Same exposure as the above, but failed to "stop" the motion of the wings.



By DR. H. E. McCORD

**B**IRDS ON THE WING are difficult enough to shoot to make thrilling subjects under any circumstances. Tame pigeons, seagulls and the like can be made to pose—that is, to go through their paces—in return for feeding.

One morning, while throwing some oyster crackers to some seagulls, I noticed the play of sunlight on the wings of these white gulls, especially when the sun was in back of me.

I set the camera (a 2¼" x 2¼" Foth Flex) at 15 feet, f8, and 1/250 of second, with a yellow filter. Then I sat down on the rocks and started to feed the birds with the camera pointed about where I expected them to fly and snapped the shutter with a cable release every time they came within focus, to obtain an entire series of interesting shots.

"BALANCE" (right hand page) by Werner Stoy.  
Contax camera, 1/1000th second at f2.

in flight



# *Make* IDEA PICTURES IN FULL COLOR

By **NICHOLAS HAZ**

*Illustrated by the Author*

**A specialist and an innovator analyzes this modernistic branch of photography and reveals the simplicity of his special methods.**

**W**E are preoccupied with tools, materials, processes and techniques. But, without ideas to express, the most perfect technique is no more than a locomotive with steam up and no place to go.

Photographs of recognizable things—such as Myrna Loy or 10th and Main Streets at the rush hour—make up most of our picture diet. But a picture is more than that. It is any image that arouses an emotion, expresses an idea or transmits a thought.







This definition makes pictures of letters, numbers, musical notes, hieroglyphics, photograms and the English and Chinese alphabets. Pictures are made by nature as well as man, and of the two, nature is the better picture-maker. Mirror images, cast shadows, foot prints, and so forth are surface representations of things and people; therefore they are pictures.

A picture consists of 1) an idea, 2) an image which carries this idea. There are many *kinds* of ideas. We think within three large confines of the mind, described as 1) concrete, 2) abstract, 3) semi-abstract.

**CONCRETE IDEAS.** When we think of a definite, specific, particular person or object, then we have a *concrete* idea. For instance *your* brother.

**ABSTRACT IDEAS.** When we think of all brothers of all times and all places, that is, we think of them in *general*, then we have an *abstract* idea. (Additional meanings of abstract will not concern us at this time.)

**SEMI-ABSTRACT IDEAS.** When we think neither of one particular brother nor of all brothers but of a limited group of them, such as British brothers for instance, then we have a *semi-abstract* idea.

We can mix our thinking of the three sorts: we can think for instance that "your brother could communicate with all British brothers, but could not communicate with all brothers." This adds up to semi-abstract, because the thought is part concrete, part abstract.

The *images* used to express ideas are in the same three categories: concrete, abstract and semi-abstract.

**CONCRETE IMAGES.** When an image is the likeness of a specified, definite, particular thing or person, such a photo of Myrna Loy or a photo of Tenth and Main Streets, then the image is concrete.

**ABSTRACT IMAGES.** When an image does not represent any particular object, but can be used to represent any and all objects of the universe, then that image is *abstract*.

All photographs are made up of tones; therefore, tones are abstract. Letters,

#### SUSIE SMITH OR INNOCENCE

Portrait of Susie Smith, aged 4, daughter of Mrs. John J. Smith of 675 Mushroom Street, Hahokus, Mass. A CONCRETE picture. FIG. 3



#### NORWEGIAN INNOCENCE

A semi-abstract idea represented by semi-abstract symbols result in a semi-abstract picture. The girl's likeness is put together of Norwegian characteristics; it is not the likeness of a given person. The flowers are sketched not from nature but as stylized symbols of Easter lilies. Fig. 4

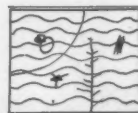


numbers, musical notes and other *general* symbols that can be used to represent various objects and ideas also are abstract.

**SEMI-ABSTRACT IMAGES.** When an image represents neither one given particular object or idea, nor all of a sort of all times and places, but stands for something in-between these extremes, then the image is semi-abstract. The likeness of Uncle Sam does not stand for one particular person, nor does it represent all mankind; it symbolizes Americans only. This is a part-general-part-specific idea, therefore Uncle Sam is a semi-abstract symbol. So are John Bull, Marianne, the American Eagle, The British Lion, and all Heraldic symbols. Cartoonists depend on semi-abstract symbols, as do mural painters of "allegoric" pictures.

#### INNOCENCE

The maker of this picture thinks that the picture expresses Innocence, although he has no logical explanation for the use of his brand new symbols. He simply follows an "inspiration" and hopes that the onlooker will agree with him about it. FIG. 5



#### INNOCENCE

Vaguely known, logically-explainable symbols here represent, collectively, an old idea. The novelty is in the combination, which never has been used before. White (of the paper) for innocence; Square for honesty; Circle for perfection; Vertical Straight for dignity, strength and pride; Horizontal Straight for peace and repose. FIG. 6



Now that we have taken all pictures apart to see what makes them tick, let us put the parts together again. Let us see what combinations occur.

When we combine a concrete idea with concrete images a concrete picture results. Portraits are concrete, especially if the particulars of the person represented are carefully specified, as in Fig. 3. There is great demand for *concrete* pictures. Portrait, documentary, commercial, industrial and news photographers are making them. Identification of both idea and image characterizes concrete pictures.

If we combine an abstract idea with a concrete image, a SEMI-ABSTRACT PICTURE will be the result. If we change the title, the likeness of little Mary Smith may be called "INNOCENCE." It signifies that Mary's image can serve as a symbol of *all* innocence.

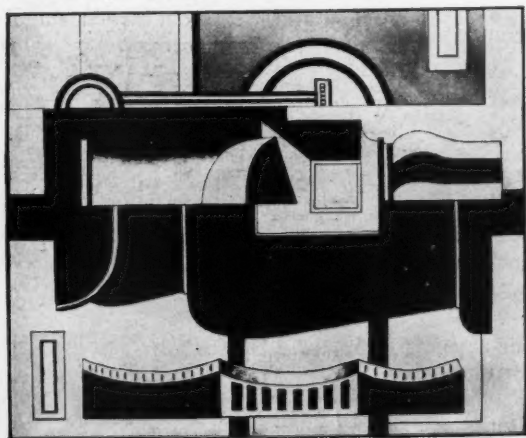
When the title is changed, the picture represents an abstract idea by a concrete symbol. Mary's concrete image became a *symbol*. But don't let us become too chesty about this method. The use of abstract titles is one of the tritest and most overworked devices in the repertoire of conventional pictorialism. A cat sunning itself in the sun is titled "Feline Satisfaction." A dog viewing a butcher-

shop becomes a representation of all "Hunger," "Desire," "Appetite," or whatever the pictorialist can think of.

If we combine semi-abstract ideas with semi-abstract symbols, a second type of SEMI-ABSTRACT PICTURE will result. One particular instance of innocence would not do for the idea, nor would innocence of all time and all places. Obviously we need something between these extremes. The idea of "NORWEGIAN INNOCENCE" refers to innocence of Norwegian nationals as a group. To represent it we shall not use the particular likeness of one person but will make up a type of several Norwegian characteristics, such as blond hair, tall figure, blue eyes, etc. The type will be the symbol. We can amplify the symbolism by adding floral symbols of innocence, namely Easter lilies. We won't use photographs of specific flowers, but "stylized" or conventionalized drawings of Easter lilies, as in Fig. 4.

In the realm of color photography, the reproduction on page 37 illustrates an effective abstract picture of "PASSION". When printed as it is, without the title, it becomes a pure abstraction. It then is calculated, not to express an idea or tell a story, but to arouse emotion. Look at the photograph until it excites you with its color and form, as the throbbing of a drum excites you with sound. It then is a successful abstraction.

Let us next see what happens when old time symbols are used to express new ideas. The pictures of Salvador Dali are put together from recognizable likenesses of things, as in Fig. 9. Admirably painted, it is apparent that Dali is an accomplished draftsman who could paint beautiful portraits and landscapes if he desired. His symbols are almost photographic likenesses of some objects and occasionally he uses photo-



ABSTRACT PICTURE.

FIG. 7



A SEMI-ABSTRACTION. This photogram is calculated, not to express an idea or tell a story, but to arouse emotion. Look at the photograph until it excites you with its form and tones as the throbbing of a drum excites with sound.  
FIG. 8

graphic prints pasted into his paintings. But the ideas which he represents are new and different from anything so far expressed. The effectiveness of a pure ab-  
(Page 142, please)

## Shutter Speed and Exposure

**Simplified system provides speedy, accurate and foolproof guide for all outdoor conditions**

**By LUKE HAMMER**

**Illustrated with an Argus**

**B**EFORE as much as aiming his camera at a subject, the good photographer knows what exposure he is going to use. So when he focuses on a subject, whether the cute expression of a baby or a quarterback crashing through the line—the cameraman can snap his shutter with calm assurance. He knows not only that he will snap his picture at the right moment, but with the correct exposure.

Exposure is controlled by two adjustments, (1) the shutter speed, and (2) the lens opening.

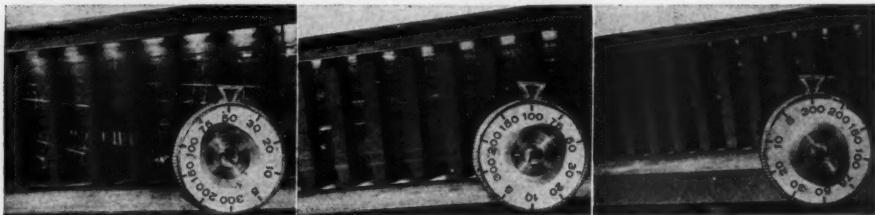
The correct shutter speed is decided by the speed of the subject and its distance from the camera.

The ordinary actions of people, walking, talking, eating, etc. are illustrated on the next page in the top strip of snapshots. At 5 feet, use a shutter speed of 1/200th of a second. At 10 feet, use 1/100th of a second. At 25 feet, use 1/50th of a second.

The center row of snapshots illustrate people running, playing, engaging in athletic events and other rapid actions. This type of activity calls for a shutter speed of  $1/300$ th of a second at 10 feet,  $1/200$ th of a second at 25 feet and  $1/100$ th of a second at 50 feet.

High speed action is shown in the bottom row. Dancing, racing, jumping, diving and other aerial activities demand the fastest shutter speeds available. If your shutter goes up only to 1/200th or 1/300th of a second, however, you can capture high speed action shots by remaining at a distance of 100 feet or more.

After deciding what shutter speed to use, next decide lens opening. The activity of the subject decides what shutter speed is necessary. The amount of light decides what lens opening to use. Lens openings or apertures are referred to in terms of "f" numbers, such as f4, f5.6, f8 and f11. These numbers are engraved on the lens mount. Each stop is double the size of



SO YOU'VE BOUGHT  
A NEW CAMERA!

THE RULES of shutter speed adjustment are the same whether the subject is in motion, or the camera, as in a moving train or automobile. Passing a picket fence (above) in an automobile travelling 25 miles an hour, these snap-shots were taken at 1/50th, 1/100th and 1/300th of a second respectively. Note that even the last print is not perfectly sharp, and to stop the action perfectly would have required a shutter speed of 1/500th of a second. When in doubt as to which of two shutter speeds to employ, use the faster one.



At 5 ft., 1/200th of a second.



### ORDINARY ACTIVITIES OF PEOPLE

When 10 ft. away, use 1/100th.



25 ft., 1/50th.



### RAPID ACTIVITIES

When 25 feet from subjects in violent action, shoot at 1/200th of a second. (above)  
If you move up to 10 feet, step up the shutter speed to 1/300th. (left)



At 20 ft., 1/1000th. ↓

At 50 ft., 1/500th of a second. ↓

At 500 ft., 1/200th. ↓



### HIGH SPEED ACTION





**LIGHT subjects.** Water, sand or sky reflects light causing subjects to require half as much exposure as the BASIC subjects below. Taken at  $1/100\text{th}$ ,  $f/11$ . FIG. 1.

the preceding one. That is, the size of the opening of a lens set at  $f/8$  is exactly twice the size of the opening of a lens set at  $f/11$ .

When the speed of the shutter is increased, it is necessary to increase the size of the lens opening in order to compensate with a larger aperture for the shorter length of time the shutter is open.

The amount of light admitted is equal whether the exposure is set for  $1/100\text{th}$  of a second and  $f/8$ , or  $1/200\text{th}$  of a

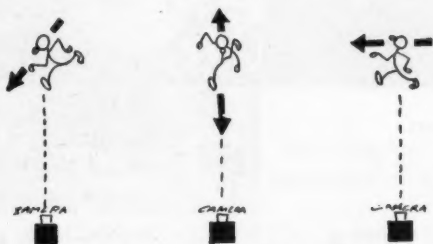
second at  $f/11$ .

As the  $1/100\text{th}$  of a second shutter speed is applicable to many subjects, let us take that as a standard. At  $1/100\text{th}$  of a second, the shutter moves fast enough to be unaffected by unsteadiness of the camera holder. It is a good idea to avoid using any speed slower than  $1/100\text{th}$  unless the camera is on a tripod or other firm support.

The lens aperture to use is decided by the amount of light on the subject. In bright sunlight, there are four types of lighting as shown in Figs. 1, 2, 3 and 4. Each type calls for a full 100 per cent more or less exposure than the next type. This makes it simple to merely open up or close down the lens opening for one or more "notches" or stops.

Average subjects are illustrated in Fig. 2. Notice that the sun is bright and there are no foreground shadows or areas where detail is necessary in shadows. Correct exposure  $1/100\text{th}$ ,  $f/8$ .

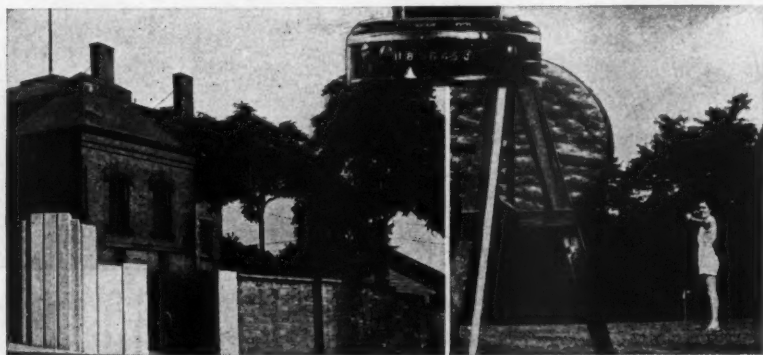
This is for use with films rated at about Weston 32 or Scheiner 24, such as



**DIRECTION** of the motion affects the use of shutter speed. The speeds given on the previous page are for subjects (left) moving at a 45 degree angle to the camera. Half the required shutter speed for subjects (center) moving directly toward or away from the camera. Double the shutter speed (right) for subjects moving at a right angle.

**AVERAGE**  
or basic  
subjects  
have  
few,  
if any,  
shadows.  
Exposure,  
 $1/100\text{th}$   
of a  
second,  
at  $f/8$ .

FIG. 2.





FOREGROUND SHADOWS, as in subjects like these, including portraits partly in shadow require moving lens opening to  $f5.6$ .

FIG. 3.



Agfa Finopan, Agfa Plenachrome, Eastman Verichrome, Eastman Panatmix X, Gevaert Panchromosa and Dupont Superior. (If faster films are used, then the basic exposure is shifted accordingly. Use a basic exposure of  $1/100$ th,  $f11$  with films such as Agfa Super Plenachrome, Agfa Superpan Supreme, Eastman Plus X, or Panchro Press.)

After determining that our basic exposure is  $f8$  at  $1/100$ th of a second, it is easy to decide what exposure to use for all outdoor conditions. The shutter speed remains at  $1/100$ th of a second. The lens opening, however, will remain at  $f11$  only while taking average subjects such as those shown in Fig. 2.

For subjects like Fig. 1, we notice the effect of sand, water, white walls or sky which act as reflectors for the sun. These natural reflectors increase the amount of light and call for less exposure; the aperture pointer is moved from  $f8$  to  $f11$ .

Next we return to subjects rather like the basic (Fig. 2), subjects except that there are shadows in the foreground. The face is partly in shadow. Subject illumin-

ated as in Fig. 3 require doubling the basic exposure. Use  $f5.6$ .

Into the shade, or when a portrait is mostly in shadow, as in Fig. 4, the next larger stop (greater lens opening) is called for. Use  $f4$ .

Figs. 1, 2, 3 and 4 all were taken during days of bright sun.

When the sun is obscured by clouds, each case calls for the next larger stop. For example, Fig. 2, an average or basic scene, calls for  $f8$  in bright sunlight, but should a cloud cover the sun, you would move to the next larger opening,  $f5.6$ .

In early morning or late afternoon light, or during winter months, increase aperture one stop.

Overcast days, with the sky covered with clouds, demand two full stops additional.

Determine the correct basic exposure for your particular film and developer and then compensate for various conditions as described above. The result will be correct exposure at all times during outdoor picture-taking, and correct exposure is the first all-important step toward getting brilliant prints full of life and depth.



SHADED SUBJECTS, or portraits mostly in shadow, require "opening up" to  $f4$ .

# ADD COLOR *to any* PICTURE

TONING gives the beauty of color to subjects like these. Indians, negroes, etc. (top), lend themselves to COPPER toning. Tennis racquets on a green lawn are perfect for GREEN toning. Night scenes are suitable for blue toning. Brown or sepia is perfect for ears of corn (bottom) or like compositions.



SINGLE SOLUTION TONERS (right), such as Mansfield or Burroughs-Wellcome, reduce the process to simple immersion of an ordinary black and white print in the dye until the desired color tone is obtained. Not even a darkroom is required, as it is done in daylight.

By KENNETH HOUSTON

TO THE early days of photography belong carbrog, fresson, bromoil and platinum—all the more or less successful endeavors to take the blight off fuzzy black-and-white images in the hope that the end product would compare favorably with a classy, hand-painted portrait in genuine oils. This same period witnessed the first of the toned prints, grandpappy's whiskered countenance a rich chocolate brown, not, perhaps, the equal of a study on real canvas, but certainly very chic and quite different from the ordinary tintypes possessed by envious neighbors. Definitely, the sepia toned print was Something.

Since sepia toning required less fuss and expense than did the various control processes, there came a time when practically every photograph with any claims to distinction was so treated. Print toning is today achieving a revival of popularity among all groups of photographers.

The revival is only a natural part of present color consciousness. While prints in full color imply considerable expense, time and elaborate technique, we can achieve a good deal of the *feeling* of color by means of a simple (one color) or multiple (two or three color) toning. Some subjects can be made to appear more realistic in one-color toning than in natural color. Modern toners are available in practically every color so that the amateur may let his fancy in color run riot.

Prepared toners make it a simple matter to create a color picture out of any ordinary black-and-white print. Single-solution color toners require only that the print be soaked in water and then in the dye solution. Not even a darkroom is necessary.

*What to Tone.* Many types of pictures lend them-





FIGURE STUDIES lend themselves to sepia toning and the simulation of flesh tones also is obtainable by toning in delicate shades of red. Leica camera, 1/1000th at f4. By Dudley Lee

selves admirably to one-color toning, although some subjects would be spoiled by the addition of color. Thus, portraits rarely are improved by all-over toning. Notable exceptions are character studies

of such racial types as Negroes and Indians. With such types sepia or copper toning can be effective. There are many scenes in which one color predominates. The classic example is a shot of a wood-



SEPIA is the conventional tone for portraits. Many variations, or degrees of warmth, are within the photographer's control when determining the most suitable tone for a portrait. Exposure 1/5th second at f4.3 with two photoflood lamps and one spotlight. By Charles I. Safran.





land brook, surrounded by trees. Frequently in such shots, no sky areas are shown so that the entire picture can be toned green. Green toning of such a print will produce a realistic effect.

Pictures of water, snow, or distant mountains showing deep-blue sky and white clouds lend themselves to blue toning.

Night shots are good subjects for toning. Sepia is effective, especially for sunsets, and copper toning for street scenes. Pictures of fires are also ideal for copper toning. Many outdoor plant studies look well in a modified copper tone that verges somewhat on the pinkish or crimson. Many indoor studies, such as church interiors, look well when immersed in a very short sepia bath, making them a rich black rather than a pronounced brown.

The type of subject determines how effective toning will be. Subjects in which there is much differentiation of color are best left alone, but where one color dominates, toning will give the print a quality of depth and richness.

*The Print for Toning.* In toning the deposited silver on the photographic paper it is made to take on the desired color. This is accomplished by immersing the finished black and white print in the toning compound, which may consist of one or more solutions. The color attacks only the silver, leaving the white parts of the print clear after washing. If the print is muddy—that is, without clearly defined highlight areas—toning will make a poor print worse. Color in the highlights will only cut down what was poor contrast to begin with.

The first requisite, therefore, for toning is a good print. Best results in toning are achieved when the decision to tone is made *before* the negative has been enlarged. The negative itself should have good contrast, with areas of fairly deep shadow, a nice range of intermediate tones and highlights ranging up to clear white.

Having determined that the final print is to be toned, select an appropriate paper. Matte surfaces in either single or double

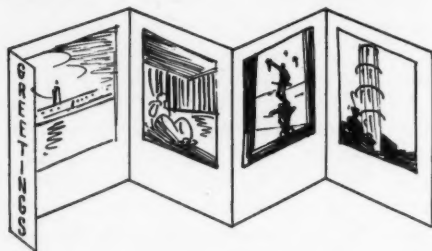
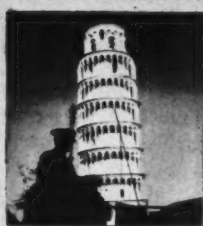
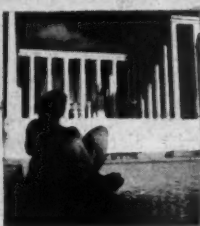
weight are best suited for the purpose. If the print is to be toned sepia, a cream or buff stock will produce a pleasing effect. For toning with other colors, white paper stock is to be preferred. Many toners alter the image strength slightly. Failure to take this fact into account is one of the reasons why toned prints so often look weak and washed out.

The print used for sepia toning should be deeper than an ordinary enlargement. Do not over-expose, however, since this degrades the entire image. Depth in the silver image is best achieved by exposing the print normally and giving it prolonged development, about 50% above normal. For this purpose, use the maximum Potassium Bromide content specified for the developer commonly used. If any traces of fog are evident in the preliminary test strips, the cause will be one of the following: 1. The bromide paper used does not permit of over-development, in which case a different paper should be selected. 2. The developer is too concentrated or its bromide content is too low. Add more bromide and try another test strip. 3. The test strip may have been over-exposed. 4. The safelight may be causing fog during the prolonged development time.

Whatever the reason, it should be corrected before the final print is made, since on the depth of the silver image depends the greater part of the success achieved in toning. When the print has been fixed and washed it should appear several shades darker than an ordinary enlargement, but without loss of detail in the shadow areas.

Prints to be toned must be adequately washed. In toning, any residue hypo in the paper will combine with the toner, resulting in an uneven deposit of color. Since greatly prolonged washing is likely to cause air bells under the gelatine surface of the paper, it is advisable to use a test to determine when the print is clear of hypo. The following formula will be found excellent for this purpose:

(Page 138, please)



A BELLOWS CARD. Prints are dry mounted on a sheet of heavy, coated paper folded in bellows fashion (see diagram at left). The message is printed on the end flap, incorporated in the pictures, or written in the space below them. FIG. 1

DIAGRAM (left) showing the method of folding the bellows card. FIG. 2

# NEW IDEAS for your CHRISTMAS CARDS

SINCE that day in 1846 when Sir Henry Cole ordered his architect, J. C. Horsley, to design the first printed pictorial greeting card for Christmas, several billion gay remembrances have traveled through the world's mails.

The legend on this first card was, "A Merry Christmas and A Happy New Year to You." No phrasemaker has improved upon it, but modern artists and photographers have improved upon the pictorial portion of the early Christmas Cards.

By **SALLY LEIGHTON**

In the age which Mr. Dooley succinctly described as that "Whin th' iron dogs howled on th' lawn, and people'd come f'r miles to see a grotto built iv relics iv th' Chicago Fire," taste in Christmas greetings ran to the animal kingdom and cats and dogs were in style.

Modern greeting cards are a far cry from this. And photographic greeting cards are not only appropriate but individual and personal.

So try for individuality in your cards this year. But before planning them let's look into paper and envelope



CARD (above) printed from a solarized photograph (right), Fig. 4. A CHINA DEER and celluloid letters were laid on Convira paper, an exposure made and the photograph solarized. Fig. 5



CONTACT PRINT of a celluloid "negative" combined with a suitable negative will produce a card similar to this. Letters are glued to the celluloid using guide lines (see Fig. 11) to keep them straight. FIG. 3

sizes. Of course a Christmas Card may be any size, but for the sake of economy it should fit a standard size envelope. Ready-made envelopes come in white in the following sizes:

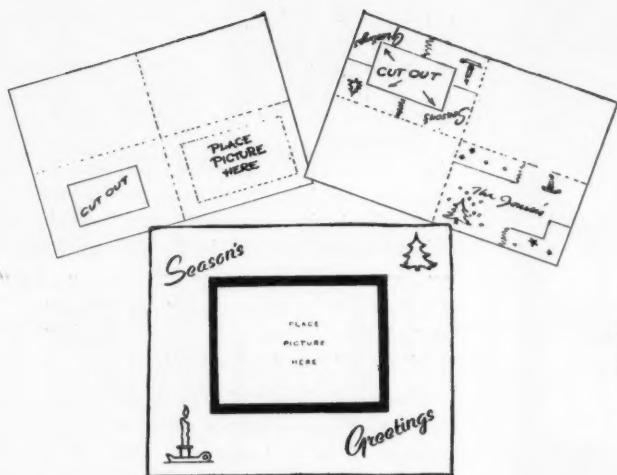
2" x 3"	3 1/2" x 6"	4 1/2" x 5 3/4"
2 1/2" x 4 1/2"	3 5/8" x 6 1/4"	5" x 6"
3 1/6" x 5 1/2"	4" x 5"	5" x 7"
3 1/4" x 4 1/2"	4 1/8" x 5 1/8"	

The card should also be a size which can be bought already cut or which will cut to advantage from a larger size piece of photographic paper. Standard photographic greeting card paper measures 4 1/2" x 5 1/2". Five-by-seven paper can be cut in half, making two cards 3 1/2 x 5 or it can be used as it. Eight-by-ten paper will cut into two five-by-eight cards, four four-by-five cards, or eight 2 1/4" x 4" cards, without any waste of paper.

For the photographer who finds the greeting message a problem the Franklin Greeting Card Co. has designed a series of folders made with cut-out squares, ovals, and circles into which photographs can be inserted. On these cards appropriate greetings have already been printed—many of them in gay colors. These cards (see Fig. 8) measure 4 1/4" x 5 1/4" and are sold with envelopes and the art corners

TWO PRINTS bound together make a clever novelty card. Cut around the closed door on three sides with a sharp knife and the recipient can actually open the door. By William Spring. FIGS. 6 and 7





A COMMERCIAL CARD into which photographs can be inserted. The upper sketches show the two sides of the card before folding. The lower sketch shows the folded card. FIG. 8

used to hold the photographs in place. They can also be purchased with the sender's name imprinted at a small extra cost.

Use single-weight paper for your print if you are planning to mount it in one of these folders or one of your own device. Double weight should be used otherwise.

If you can do hand lettering, you have no problem—simply print the greeting you wish to use and your name on white paper, using India ink, and copy it on process film.

If hand lettering is out of the question, buy half-inch white celluloid letters at any office supply house or Willson's gummed paper letters manufactured by the Tablet and Ticket Co. (5c per package of ten letters, all of one kind). These come in forty sizes from  $\frac{1}{8}$  to 4 inches. The ordinary alphabet soup letters are also worth trying. These can be bought at any grocery store and cost ten cents a bag—and there are thousands in each bag.

The black gummed letters can be pasted on a piece of paper and copied as the hand lettering is, or they can be pasted onto a piece of celluloid. A sheet of celluloid can be purchased at any artists' supply store for about thirty-five cents. This celluloid can be used exactly as a negative is. Before pasting letters on it, plan the size and shape card you wish on a piece of white paper. Draw guide

lines where you wish the bottoms of the letters to come (Fig. 11). Now place the celluloid over the paper and paste the letters on, keeping them in line with the guide lines on the white paper. If the negative you plan to use is large enough, trim the edges and place it in position on the celluloid. Lay the whole thing on the glass of your printing machine, carefully place a piece of contact paper over it and print as is. In this case the lettering will be white and the card black except in the portion covered by the negative. Fig. 3 is an example of this type of card.

If you prefer black letters on white, carefully paint around the letters pasted on the celluloid with photographic opaque and then remove them. Take care not to put opaque over the part where the negative is to be placed. Treat the celluloid, however, to remove the greasy surface before using it. This can be done by scouring with a non-abrasive powder such as Bon Ami or by covering the surface with India ink and then washing it clean. Dry thoroughly before using.

These celluloid "negatives" can be used in many ways. For example, after degreasing, sketches can be made on them, letters pasted on and a contact print made on single-weight paper. Use this as a paper negative and print from it.

Vary your cards by Solarization. To

do this give the print full exposure, develop twice the usual time and sponge off the excess developer. Expose the print about four seconds, twelve inches from a 75-watt bulb and develop half normal developing time, immerse in the shortstop and fix. Make contacts from this. How to make solarized pictures was covered in detail in the October issue of MINICAM Magazine, page 26.

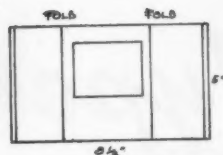
If you are interested in using color this year try toning your pictures copper or green and mounting them on silver, copper, or gold paper. (See p. 46.)

Make a bellows card if you feel very ambitious. These cards are made of heavy paper (120-lb. white enamel is a good weight) folded in bellows fashion as in Fig. 1. On each section a print is dry mounted. The subjects of these prints should be related. If there are five members of the family, you might use five folds and place a portrait or silhouette of each member of the family on one section. Then let each one write a greeting in longhand under his or her picture. A series of pictures of your hobby or a series of travel pictures can be used in this way. Be sure the pictures are excellent in quality and interesting and that they have some significance. If you're a world traveler—fine, use travel pictures—and the loveliest you have. If you're a bell collector, use bells.

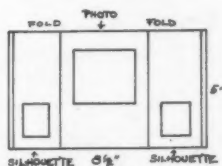
You need not use envelopes if you make your cards of a fairly heavy board such as three-ply bristol board. Cut the board the length you wish ( $8\frac{1}{2}'' \times 5''$  is a good size) and then fold as shown in Fig. 9. Dry mount a print on the center section, and write or print a personal greeting below, or make a print the size of the center section incorporating your greeting. Fold over the two ends, which will lap  $\frac{1}{4}''$ , and seal with a Christmas seal. This can be sent through the mails as it is. Be sure to use the side opposite the seal for the address and stamp.

If you have a group of three pictures you would like to use together, mount them in a folder of this type. Silhouettes of the senders can be used for small pictures while a Christmas scene, a landscape, etc., can be used for the larger. This is effective when the pictures are arranged as in Fig. 10.

NO ENVELOPE is necessary for a card such as this. FIG. 9



SILHOUETTES of the senders are attractive when mounted as shown here. FIG. 10



PLAN for a 4x5" card showing guide lines used in pasting letters on the celluloid "negative." FIG. 11

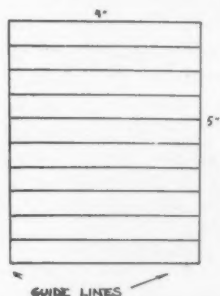


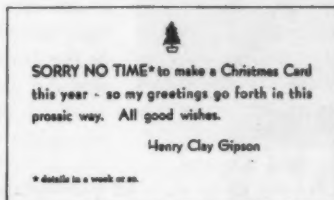
TABLE TOP pictures offer an opportunity to make the greeting an integral part of the picture. By Ray Kirshner. FIG. 12



THE GREETING is made of hand-cut paper letters pinned to a clothes line. By Edward Duffey. FIG. 13



A NEW NOTE from a photographer is this pictureless card (below). FIG. 14





# Types of Finders

THE finder on a camera is as important as the gun sight on a rifle. The *viewfinder* shows a miniature image of the subject and how much of it will appear in the final picture. The *range-finder* is a device for measuring distances.

Everyone is familiar with the waist-level reflecting viewfinder (Fig. 1) which is standard equipment on box cameras and many others. It consists of a small mirror set at a 45-degree angle below a magnifying lens which produced a small but brilliant image. For this reason, this finder is known as the "*brilliant*." It can be used at waist or ground level, but not at eye level.

Most miniature cameras use a *telescopic* type of viewfinder (Fig. 2). This is a miniature telescopic in reverse. Looking through it is like looking through the small end of a telescope. A mask inside the telescope finder limits the field of view to the rectangular area equal to that reproduced by the camera lens on the film.

The *wire frame* finder (Fig. 3) is not always as accurate as the previous types, but it is about the easiest type of finder to use and it is especially valuable when photographing athletic events or other moving subjects. The open wire frame makes it easy to follow moving subjects because the

operator has unobstructed vision through both eyes.

The *folding-optical* finder (Fig. 4) is like the wire frame type except that there is a lens in the front frame and this delineates more accurately the exact size of



"BRILLIANT" viewfinder, waist level. FIG. 1.

the field taken in.

In the early days of photography, the



TELESCOPIC type of viewfinder is standard on most 35 mm. cameras. FIG. 2.



WIRE FRAME viewfinder for sport shots. FIG. 3.

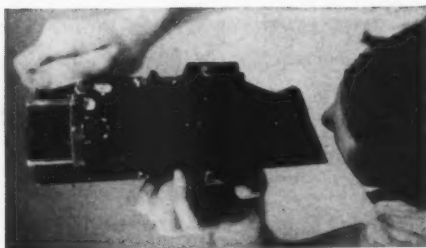


OPTICAL folding viewfinder shows sharply the margins of the field seen. FIG. 4.

camera man used a pane of ground glass in the back of the camera and a black cloth over his head in order to see the image of his subject. This method is still pursued with view cameras. After the desired picture is framed in the ground glass, the glass is slipped out and the film inserted in its place.



GROUND GLASS viewing screen permits focusing on the back of the camera. FIG. 5.



Ground glass focusing is especially valuable for use in close-up work, copying, etc. The Speed Graphic is an example of a popular camera providing a ground glass focusing screen. Fig. 5 illustrates a  $3\frac{1}{4} \times 4\frac{1}{4}$  folding type of camera with the operator looking through the folding rear shade for focusing on the ground glass.

Reflex cameras employ ground glass finders with this advantage, that it is not necessary to remove the ground glass to insert the film for each picture. Fig. 6 shows how the image appears in the top of a reflex type camera, in this case a Rolleiflex.

In the single-lens reflex camera, a movable mirror works at an angle between the lens and ground glass screen. When the shutter is pressed, the mirror flips up, allowing the light to reach the film.

The dual-lens reflex employs two lenses. One lens focuses the image on the ground glass viewing screen, while the other lens focuses the image on the film. This obviates the necessity for a movable mirror that can go out of adjustment.

The magnifier (Fig. 7) on top of the ground glass viewing screen of a reflex camera of either single or dual lens type magnifies the image to facilitate sharp focusing. The viewing screen in cameras of this type operates as a viewfinder and rangefinder, or both. The image is watched on the ground glass while the lens is racked back and forth until the picture is sharp.

Cameras which do not utilize a ground glass viewing screen use a number of other methods for obtaining sharp focus. A footage scale is provided on the camera bed of some folding cameras (Fig. 8) or on the lens mount (Fig. 9).

Very accurate focusing is obtained by measuring the distance to the subject with a yardstick or tape measure and then setting the lens for the correct number of feet.

As it is not always convenient to measure distances by a tape measure or by stepping them off, an external rangefinder (Fig. 12) is a desirable accessory.

Rangefinders operate on the same principle as an artillery rangefinder. A split-image rangefinder shows an image which is cut in half in the middle. The dial is turned until the two halves come together. This type was illustrated in MINICAM for October, page 17.

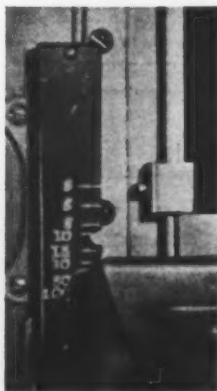
The coincidence rangefinder shows a double image of the subject (Fig. 10) until the dial reaches the correct distance and



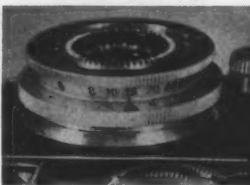
GROUND GLASS viewing screen on reflex camera facilitates viewing and focusing. FIG. 6.



MAGNIFIER over ground glass for precision focusing. FIG. 7.



FOCUSING by footage scale on bed of camera. FIG. 8.



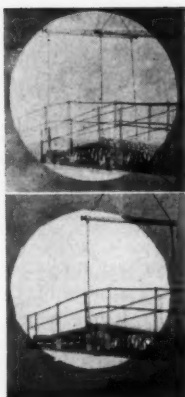
FOCUSING by scale on lens mount. FIG. 9.

then the two images merge into one, or coincide. The correct distance may now be read in feet and the camera then set accurately.

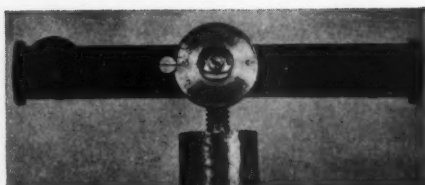
In order to eliminate the step involved in reading the number of feet on the rangefinder and then setting the camera lens to this distance, some camera manufacturers gear the rangefinder to the lens. The result is the *coupled rangefinder*. The lens is always focused for the same distance as the rangefinder.

The Argus Model C, for example, has a built-in rangefinder, but it is not coupled to the lens. The Argus C2 has a gear on the outside of the case, to gear the rangefinder to the lens to create a coupled rangefinder.

A *depth of focus table*, Fig. 13, is engraved on some cameras. This one is from a camera using a lens of 3-inch focal length. With the lens set at 10 feet,



COINCIDENCE rangefinder shows two images (top). When dial is turned to correct distance, the images merge into one to show that correct distance has been obtained. FIG. 10.



SEPARATE RANGEFINDER (coincidence type). The eyepiece is the small circle at the left. The dial is calibrated in feet. FIG. 12.



DEPTH OF FOCUS SCALE on lens mount set at 15 feet. The numbers 2.8 on either side of the 15-foot mark indicate that the depth of focus at f2.8 is from about 13 to 19 feet. Depth of focus is greater at f5.6, as these numbers can be seen at approximately the 12 and 24 foot marks, indicating that everything from about 12 to 24 feet is in focus when the lens is set at 15 feet and f5.6. FIG. 13.

for example, the table shows that at f8 the depth of focus is 5½ to 50 feet.

A *depth of focus scale* is engraved right on some lens mounts. In Fig. 13, the lens can be seen set at 15 feet. At this distance, the depth of focus at f2.8 is only a few feet on either side of the 15 foot mark. At f5.6, the numbers are farther apart, f5.6 being seen at about 12 and 24, indicating a depth of focus from 12 to 24 feet. This is a built-in *depth of focus scale*.

"Zone" focusing is an improvement on focusing by scale, introduced with the Robot camera. It is based upon a practical application of depth of focus. That is, when a lens is set at 20 feet, for example, at f3.5, all subjects from 12 to 55 feet are in sharp focus.

The Robot camera (Fig. 9) has colored dots on the lens mount and has dots of corresponding colors on the footage scale. When the lens aperture is set at f2.8, for example, it is set on a red dot and therefore all subjects between the corresponding red dots on the footage scale are in focus. Fig. 9 illustrates the lens set at 13 feet; the red dots on either side show that at f2.8, subjects from 10 to 20 feet are in sharp focus.

f	3.5	5.6	8	11	16	22
∞	30-∞	18-∞	13-∞	9-∞	6.5-∞	4.5-∞
20	12-55	10-∞	8-∞	6.5-∞	5-∞	3.8-∞
10	7.3-15	6.5-20	5.5-40	4.8-∞	4-∞	3.2-∞
6.5	5.3-8.5	4.8-10	4.3-13	3.8-20	3.2-∞	2.7-∞
5	4.2-6	4-6.5	3.5-8	3.2-10	2.8-20	2.4-∞
4	3.5-4.5	3.2-5	3-5.5	2.8-6.7	2.5-10	2.1-25
3.3	3-3.7	2.8-4	2.6-4.4	2.4-5	2.2-6.6	1.9-11
2.5	2.3-2.7	2.2-2.9	2.1-3.1	2-3.4	1.8-4	1.6-5.5
2	1.9-2.1	1.8-2.2	1.7-2.4	1.6-2.6	1.5-3	1.4-3.5
1.8	1.7-1.9	1.65-2	1.6-2.1	1.5-2.2	1.4-2.5	1.3-3

DEPTH OF FOCUS TABLE is engraved on some cameras. To use, find the distance for which camera is set in left hand column, for example, 20 feet. Find lens aperture in top line, for example, f5.6. Depth of focus then is 10 feet to infinity, and everything ten feet or more from the camera is in sharp focus. FIG. 11.

## FIXED-FOCUS CAMERAS



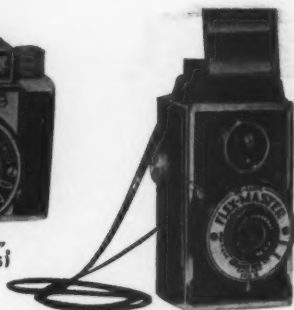
FLASH-MASTER, \$7.7, \$4.50



UNIVEX AF-4, 1 1/4" x 1 1/2", f16, \$1.95.  
(See Line No. 38)



FALCON SR, 1 1/4" x 1 1/2", \$3.98. (See Line No. 15)



FLEX-MASTER DeLuxe, \$7.7, \$5.



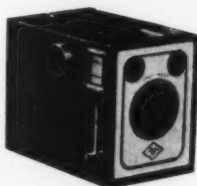
MONARCH 620, \$4.  
(See Line No. 26)



PRINCESS (Pickwick), 1 1/4" x 1 1/2", \$7.7, \$5.  
(See Line No. 27)



FALCON Press Flash



SHUR SHOT, Agfa, 2 1/4" x 3 1/4", \$2.10.  
(See Line No. 34)



ARGUS M, f6.3, \$7.50. (See Line No. 1)

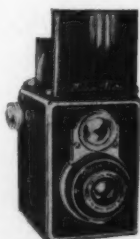


TWIN ROLLS, \$4. (See Line No. 36)

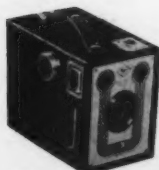


IRIS Standard, 1 1/4" x 1 1/2", \$7.9, \$5.95. (See Line No. 21)

## SEMI-FIXED FOCUS



FALCON FLEX A, \$5.95.



SHUR SHOT Special,



ARGUS A2, \$12.50.



READYSET, Agfa, \$7.75.



CLIPPER SPECIAL, Agfa,  $2\frac{1}{4}" \times 2\frac{1}{4}"$ ,



SUPER IKONTA B,  $2\frac{1}{4}" \times 2\frac{1}{4}"$ .



NETTAR A,  $1\frac{1}{2}" \times 2\frac{1}{4}"$ .

## ROLL FILM CAMERAS (OTHER THAN 35mm.)

(See directory p. 70)



IRIS DELUXE,  $1\frac{1}{2}" \times 1\frac{1}{2}"$ , Vitar  
f7.9, \$7.50. (See Line No. 340)



ZENITH STANDARD,  $1\frac{1}{2}" \times 1\frac{1}{2}"$ ,  
f4.5, \$12.50. (See Line No. 383)



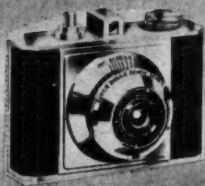
FOTH DERBY,  $1\frac{1}{4}" \times 1\frac{1}{4}"$ ,  
f3.5, \$21.50. (See Line No. 327)



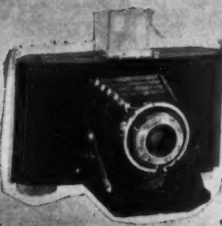
IMAGEE AUTO ULTRIX,  
 $1\frac{1}{2}" \times 2\frac{1}{4}"$ , f4.5, \$18.50.



IKONTA B,  $2\frac{1}{4}" \times 2\frac{1}{4}"$ , Zeiss  
f4.5, \$44. (See Line No. 338)



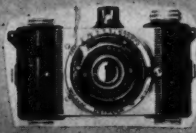
SUPER ROLLS,  $1\frac{1}{4}" \times 2\frac{1}{4}"$ ,



VOKAR I,  $2\frac{1}{4}" \times 2\frac{1}{4}"$ , Vokar  
f6.3, \$15. (See Line No. 371)



SUPER SPORT DOLLY, new model,  
Tessar f2.8, \$86. (See Line No. 361)

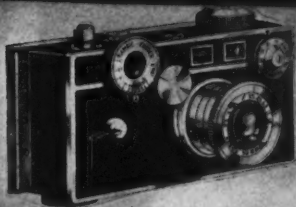


DETKOLA G,  $1\frac{1}{4}" \times 1\frac{1}{4}"$ , Wollensak f4.5, \$9.95.  
DETKOLA D,  $1\frac{1}{4}" \times 1\frac{1}{4}"$ , Wollensak f4.5, \$15.



FALCON GE,  $1\frac{1}{4}" \times 1\frac{1}{4}"$ , Wollensak f3.5, \$23.50.

PLENAX HYPAR,  $2\frac{1}{4}" \times 3\frac{1}{4}"$ , f6.3, \$14.75.



ARGUS C3, 1" x 1½", Cinar f2.5, \$30.



ROBOT II, 1" x 1".



AGFA MEMO, 1" x 1½", f4.5, \$25.



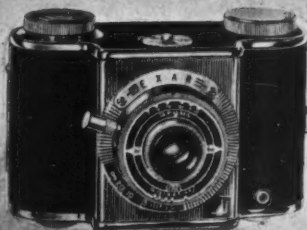
(See Line No. 105)  
ARGUS A2F, 1" x 1½", f4.5, \$18.



KODAK 35, 1" x 1½".



LEICA, Standard, 1" x 1½".



EXAR, 1" x 1½", f4.5, \$19.50. (See Line No. 215)



PERFEX 44, 1" x 1½", f2.8,  
\$47.50. (See Line No. 324)



LEICA IIIb, 1" x 1½", Leitz Summilux f2, \$237.



DOLLINA O, 1" x 1½", Contar f4.5, \$23.

**SOME 35 MM.  
CAMERAS**  
For complete directory see page 64



SUPER ROLLS, 1" x 1½", Simpson f4.5, \$13.95.



CONTAX II, 1" x 1½", Zeiss Sonnar f1.5, \$327.



CONTAX III, 1" x 1½", Zeiss Sonnar f1.5, \$372. (See Line No. 207)



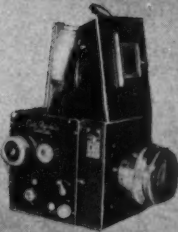
TENAX I, 1" x 1", Zeiss Nover f3.5, \$60.





NATIONAL GRAFLEX II.

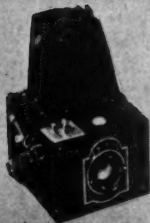
BEIER-FLEX. Xenar f2.9.  
(See Line No. 401)



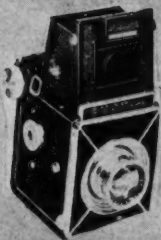
PRIMARFLEX, 2 1/4" x 2 1/4".

GRAFLEX, Series B, 2 1/4" x 3 1/4", Kodak Anastigmat f4.5, \$91. (See Line No. 419)

# REFLEX CAMERAS



K. W. REFLEX, 2 1/4" x 3 1/4",  
f6.3, \$15. (See Line No. 426)



PILOT SUPER, 2 1/4" x 2 1/4".



EXAKTA, NIGHT B, 1 1/2" x 2 1/4", Primoson f1.9, \$210



EXAKTA, KINE, 1" x 1 1/2", Exaktar f3.5, \$130. (See Line No. 411)

IKOFLEX III, 2 1/4" x 2 1/4", Zeiss Tessar f2.8, \$199. (See Line No. 501)



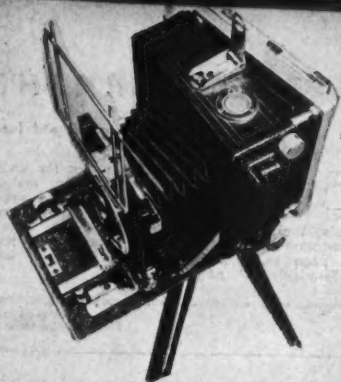
ROLLEICORD II, 2 1/4" x 2 1/4", Zeiss Triotar f3.5, \$103.50. (See Line No. 503)



ROLLEIFLEX Automatic, 2 1/4" x 2 1/4", Zeiss Tessar f3.5, \$205. (See Line No. 504)

VOIGTLANDER, 2 1/4" x 2 1/4", Voigtar f4.5, \$48.50. (See Line No. 509)



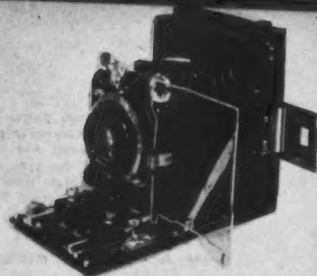


## VIEW CAMERAS STEREO CAMERAS

**LINHOF Precision Technika**,  $2\frac{1}{4}" \times 3\frac{1}{4}"$ ,  
Tessar f4.5, \$270. (See Line No. 624)



**ALTISCOP**, stereo camera,  
 $2\frac{1}{4}" \times 3\frac{1}{4}"$ , Victor f4.5,  
\$54. (See Line No. 701)



**FAVORITA Primer**



**IMAGEE DUPLEX**,  $3\frac{1}{2}" \times 4\frac{3}{4}"$ ,  
\$65. (See Line No. 611)



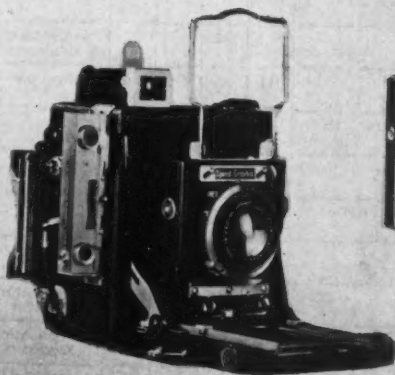
**BEE BEE Model A**,  $2\frac{1}{2}" \times 3\frac{1}{2}"$ ,  
Tessar f4.5, \$78. (See Line No. 602)



**SKYVIEW D**,  $3\frac{1}{4}" \times 4\frac{1}{4}"$ , Tessar  
f4.5, \$245. (See Line No. 644)



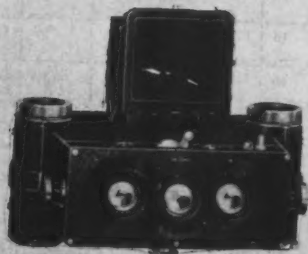
**MAXIMAR A**, Tessar f4.5,  
\$68. (See Line No. 630)



**SPEED GRAPHIC**,  $2\frac{1}{4}" \times 3\frac{1}{4}"$ , Kodak Ektar f3.7,



**PLAN PRIMA**,  
Trioplan f3.6



**ROLLEIDOSCOP**, stereo camera, Tes-  
sar f4.5, \$350. (See Line No. 705)

# COMPARATIVE PHOTOGRAPHIC

**BEGINNING** on these pages is the most thorough and up to date directory ever published on cameras, enlargers, exposure meters and cine cameras. It does not claim to be perfect, however, but many new items were inserted just before press time to make this directory as complete as possible, as of November 1, 1939. Specifications given for each item are those of the manufacturer.

The tabular listing method followed is to enable

comparison at a glance, of the relative prices and features of various items.

Read from left to right across two pages for each camera. The "line number" given on each side makes it easy to put a ruler across the pages to read each camera line. Where a choice of lenses or other features are available, a separate line is allowed for each price. For a description of types of camera finders, see the article on page 56. For a dictionary of terms, see "Camera Terminology," page 126.

## FIXED-FOCUS

Line Number	Name of Camera	Price	FILM			LENS							Interchangeable
			Negative Size (in inches)	Film Size	Special Spool	Make and Formula	Aperture	Aperture, smallest	Focal Length, inches	Focuses as close as	Type		
1	Argus M	\$7.50	1x1½	828	✓		f6.3	f12.7				Triplet Anastigmat	
2	Baby Brownie	1.00	1½x2½	A8, 127			f16					Meniscus	
3	Brownie Six-16	3.25	2¼x4¼	PD16, 616		Diway	f11	f16					
4	Brownie Special 620	3.75	2¼x3¼	PB20, 620		Diway							
5	Bullet	2.00	1½x2½	A8, 127			f12.5	f16				Meniscus	
6	Bull's Eye Six-20	2.75	2¼x3¼	PB20, 620			f15					Meniscus	
7	Cadet Flash, A8		1½x2½	A8, 127									
8	Cadet, A-8 Special		1½x2½	A8, 127									
9	Cadet, B-2		2¼x3¼	B2, 120									
10	Cadet, D6		2½x4¼	D6, 116									
11	Clipper Unifo	5.00	2½x2½	PD16, 616		Unifo							
12	Dual Reflex	7.50	1¼x1½	A8, 127		Eyvar	f7.7	f22				Achromatic Meniscus	
13	Falcon-Abbey Electri-camera	8.95	2¼x3¼	B2, 120			f11		4½			Meniscus	
14	Falcon Minicam, Jr.	2.29	1¼x1½	A8, 127		Minivar			2				
15	Falcon Minicam, Sr.	3.98	1¼x1½	A8, 127		Minivar			2				
16	Falcon Press Flash	5.95	2¼x3¼	B2, 120		Faltar Precise			4½				
17	Congress No. 41 (Fleetwood)	1.00	1¼x1½	A8, 127		Graf			2			Meniscus	
18	Flex Master No. 248	4.00	1¼x1½	A8, 127		Graf	f7.7	f16	2			Achromatic Meniscus	
19	Flex Master (DeLux) No. 348	5.00	1¼x1½	A8, 127		Graf	f7.7	f16	2			Achromatic Meniscus	
20	Iris Flash Standard	6.95	1½x1½	Univex No. 00	✓	Vitar	f7.9	f22	2			Doublet	
21	Iris Standard	5.95	1½x1½	Univex No. 00	✓	Vitar	f7.9	f22	2			Doublet	

# EQUIPMENT DIRECTORY

## CONTENTS

CAMERAS	84 to 83
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ENLARGERS	86 to 97
(Pictures p. 85)	
EXPOSURE METERS	98 to 100
(Pictures p. 101)	
CINE CAMERAS	102 to 105
(Pictures p. 106-108)	

## CAMERAS

Make	Shutter					View-finder				Range Finder	Features						Source	Line Number		
	Speed Range Slowest and fastest shutter speeds (in inches)	No. of Speeds	Bulb	Time	Cable Release	Type	Waist level brilliant	Eye level telescopic	Eye level optical folding		Folding wire frame	Ground glass	Tripod Socket	Built-in Exposure Meter	Self-timer	Parallax adjustment			Synchronizer terminal	Auto Film Transport
		1	✓			Between Lens	✓					✓							International Research Corp.	1
	*Instan.	1																	Eastman Kodak Co.	2
	*Instan.	1	✓			Rotary													Eastman Kodak Co.	3
	*Instan.	1	✓			Rotary													Eastman Kodak Co.	4
	*Instan.	1	✓																Eastman Kodak Co.	5
	*Instan.	1	✓																Eastman Kodak Co.	6
	*Instan.	1				Single Leaf			✓							✓			Agfa Ansco Corp.	7
	*Instan.	1	✓			Single Leaf	✓												Agfa Ansco Corp.	8
	*Instan.	1	✓			Single Leaf	✓												Agfa Ansco Corp.	9
	*Instan.	1	✓			Single Leaf	✓												Agfa Ansco Corp.	10
	*Instan.	1	✓			Single Leaf			✓										Agfa Ansco Corp.	11
Irwin	1/50—1/25	2	✓			Behind Lens	✓		✓										Irwin Corp.	12
Abbey	1/100—1/40					Behind Lens										✓			Utility Mfg. Co.	13
	*Instan.	1	✓	✓		Single Leaf	✓					✓							Utility Mfg. Co.	14
			✓			Single Leaf	✓					✓							Utility Mfg. Co.	15
	*Instan.	1				Single Leaf	✓												Utility Mfg. Co.	16
	*Instan.	1	✓			Single Leaf		✓											Monarch Mfg. Co.	17
	*Instan.	1	✓			Single Leaf													Monarch Mfg. Co.	18
	*Instan.	1	✓			Single Leaf													Monarch Mfg. Co.	19
Univex	*Instan.	1	✓	✓	✓	Twin Leaf	✓					✓				✓			Universal Camera Corp.	20
Univex	*Instan.	1	✓	✓	✓	Twin Leaf	✓					✓				✓			Universal Camera Corp.	21

# Fixed Focus

Line Number	Name of Camera	Price	FILM			LENS						Interchangeable
			Negative Size (in inches)	Film Size	Special Spool	Make and Formula	Aperture	Aperture, smallest	Focal Length, inches	Foci as close as	Type	
22	Kandor Jr.	1.00	1¼x1½	A8, 127		Eyvar	f7.7	f22			Achromatic Meniscus	
23	Lark	2.98	1¼x1½	A8, 127		Eyvar					Meniscus	
24	Lincoln No. 1 (Majestic)	1.25	1¼x1½	A8, 127		Graf			2		Meniscus	
25	Lincoln (Majestic)	2.25	1¼x1½	A8, 127		Graf	f7.7	f16	2		Achromatic Meniscus	
26	Monarch 620	4.00	1¼x2½	PB20,620		Graf			2½		Meniscus	
27	Princess (Pickwick)	5.00	1¼x1½	35mm.		Graf	f7.7	f16	2		Achromatic Meniscus	
28	Plenax PD16	11.50	2½x4¼	PD16,616		Antar					Achromatic Meniscus	
29	Readyset PD16	8.75	2½x4¼	PD16,616							Achromatic Meniscus	
30	Readyset PB20	7.75	2½x3½	PB20,620								
31	Olympian (Regal)	2.00	1¼x1½	A8, 127		Graf					Meniscus	
32	Olympian (Regal)	3.00	1¼x1½	A8, 127		Graf			2		Achromatic	
33	Shur-Flash, B2	3.95		B2, 120								
34	Shur-Shot B2	2.10	2½x3½	B2, 120								
35	Shur-Shot D6	2.45	2½x4¼	D6, 616								
36	Twin Rolls 620	4.00	1¼x2½	PB20, 620		Simpson Opto	f11		2½		Meniscus	
37	Univex A Box Camera	.50	1¼x1½	Univex No. 00	✓	Univex	f16		2		Meniscus	
38	Univex AF-4	1.95	1¼x1½	Univex No. 00	✓	Univex	f16		2½		Meniscus	
39	Univex AF-5	3.50	1¼x1½	Univex No. 00	✓	Univex	f16		2½		Achromat	

## SEMI FIXED-FOCUS

101	Agfa B2 Shur-Shot Special	2.95	2½x3½	B2, 120								
102	Agfa D6 Shur-Shot Special	3.35	2½x4¼	D6, 116								
103	Argus A	10.00	1x1½	35mm.			f4.5	f18			Triplet Anastigmat	
104	Argus A2	12.50	1x1½	35mm.			f4.5	f18			Triplet Anastigmat	
105	Argus A2F	15.00	1x1½	35mm.			f4.5	f18	2		Triplet Anastigmat	
106	Falcon Flex A	5.95	2½x2½	B2, 120			f11	f16	3½		Meniscus	

# Cameras (continued)

Make	Shutter				View-finder				Range Finder	Features								Source	Line Number
	Speed Range Slowest and fastest shutter speeds (in inches)	No. of Speeds	Bulb Time	Cable Release	Type	Waist level brilliant	Eye level telescopic	Eye level optical folding	Folding wire frame	Ground glass	Tripod Socket	Built-in Exposure Meter	Self-timer	Parallax adjustment	Synchronizer terminal	Auto Film Transport	Sim. Film-Shutter		
Irwin	1/50—1/25	2	✓		Behind Lens	✓												Irwin Corp.	22
Irwin	1/50—1/25	2	✓		Behind Lens	✓												Irwin Corp.	23
	*Instan.	1	✓		Single Leaf	✓												Monarch Mfg. Co.	24
	*Instan.	1	✓		Single Leaf	✓												Monarch Mfg. Co.	25
	*Instan.	1	✓		Single Leaf	✓												Monarch Mfg. Co.	26
	*Instan.	1	✓		Single Leaf	✓												Monarch Mfg. Co.	27
	*Instan.	1	✓		Single Leaf	✓		✓										Agfa Ansco Corp.	28
	*Instan.	1	✓		Single Leaf	✓						✓						Agfa Ansco Corp.	29
	*Instan.	1	✓	✓	Single Leaf	✓						✓						Agfa Ansco Corp.	30
	*Instan.	1	✓		Single Leaf	✓												Monarch Mfg. Co.	31
	*Instan.	1	✓			✓												Monarch Mfg. Co.	32
	*Instan.	1			Single Leaf	✓								✓				Agfa Ansco Corp.	33
	*Instan.	1	✓		Single Leaf	✓												Agfa Ansco Corp.	34
	*Instan.	1	✓		Single Leaf	✓												Agfa Ansco Corp.	35
Rolls	*Instan.	1	✓			✓												Rolls Camera Mfg. Co.	36
	*Instan.	1			Rotary													Universal Camera Corp.	37
	*Instan.	1	✓		Rotary	✓												Universal Camera Corp.	38
	*Instan.	1	✓		Rotary	✓												Universal Camera Corp.	39

## CAMERAS

	*Instan.	1	✓		Single Leaf	✓												Agfa Ansco Corp.	101
	*Instan.	1	✓		Single Leaf	✓												Agfa Ansco Corp.	102
	1/200—1/25	6	✓	✓	Three Leaf	✓					✓							International Research Corp.	103
	1/200—1/25	6	✓	✓	Three Leaf	✓					✓							International Research Corp.	104
	1/200—1/25	6	✓	✓	Three Leaf	✓					✓							International Research Corp.	105
	1/30	1	✓		Behind Lens						✓							Utility Mfg. Co., Inc.	106

# Semi Fixed-Focus

Line Number	Name of Camera	Price	FILM			LENS						Interchangeable
			Negative Size (in inches)	Film Size	Special Spool	Make and Formula	Aperture	Aperture, smallest	Focal Length, inches	Focuses as close as	Type	
107	Falcon Flex B	7.95	2¼x2¾	B2, 120			f7.7				Achromatic	
108	Falcon Automatic No. 4	5.95	2¼x3¼	B2, 120								

## 35 MM.

201	Agfa Memo	25.00	1x1½	35mm.	✓		f4.5	f22	2	3½'	Anastigmat	
202	Agfa Memo	35.00	1x1½	35mm.	✓		f3.5	f22	2	3½'	Anastigmat	
203	Argus C2	25.00	1x1½	35mm.		Cintar	f3.5	f18	2		Anastigmat	✓
204	Argus C3	30.00	1x1½	35mm.		Cintar	f3.5	f18	2		Anastigmat	✓
205	Clarus		1x1½	35mm.		Clarus	f3.5	f16	2		Anastigmat	✓
206	Contax II	327.00	1x1½	35mm.		Zeiss	f1.5	f11	2	3'	Anastigmat	✓
207	Contax III	372.00	1x1½	35mm.		Zeiss	f1.5	f11	2	3'	Anastigmat	✓
208	Dollina 0	23.00	1x1½	35mm.		Certar	f4.5	f16	2	3'	Anastigmat	
209	Dollina 0	34.00	1x1½	35mm.		Certar	f2.9	f16	2	3'	Anastigmat	
210	Dollina Super	92.50	1x1½	35mm.		Xenar	f2.8	f16	2	3½'	Anastigmat	
211	Dollina Super	107.50	1x1½	35mm.		Tessar	f2.8	f22	2	3½'	Anastigmat	
212	Dollina Super	110.00	1x1½	35mm.		Xenon	f2	f16	2	3½'	Anastigmat	
213	Dollina II	66.00	1x1½	35mm.		Schneider Xenar	f2.8	f16	2	3½'	Anastigmat	
214	Dollina II	72.00	1x1½	35mm.		Zeiss Tessar	f2.8	f22	2	3½'	Anastigmat	
215	Exar	19.50	1x1½	35mm.			f4.5	f18			Anastigmat	
216	Jubilette	35.00	1x1½	35mm.		Meyer Trioplan	f2.9	f16	2	5'	Anastigmat	
217	Kodak 35	33.50	1x1½	35mm.		Kodak	f3.5		2		Anastigmat	
218	Leica, Standard	99.00	1x1½	35mm.		Leitz Elmar	f3.5	f18	2	3½'	Anastigmat	✓
219	Leica II	135.00	1x1½	35mm.		Leitz Elmar	f3.5	f18	2	3½'	Anastigmat	✓
220	Leica III	204.00	1x1½	35mm.		Leitz Summar	f2	f12.5	2	3½'	Anastigmat	✓
221	Leica IIIb	237.00	1x1½	35mm.		Leitz Summitar	f2	f12.5	2	3½'	Anastigmat	✓
222	Leica, 250 Exposure Model	240.00	1x1½	35mm.		Leitz Elmar	f3.5	f18	2	3½'	Anastigmat	✓



# Cameras (continued)

Make	Shutter					Type	View-finder					Range Finder	Features					Source	Line Number
	Speed Range Slowest and fastest shutter speeds (in inches)	No. of Speeds	Bulb	Time	Cable Release		Waist level brilliant	Eye level telescopic	Eye level optical folding	Folding wire frame	Ground glass		Tripod Socket	Built-in Exposure Meter	Self-timer	Parallax adjustment	Synchronizer terminal		
						Single Leaf	✓											Utility Mfg. Co., Inc.	107
																		Utility Mfg. Co., Inc.	108

## CAMERAS

	1/200—1/2	7	✓	✓		Bet. Lens	✓					✓							Agfa Ansco Corp.	201
	1/200—1/2	7	✓	✓		Bet. Lens	✓					✓							Agfa Ansco Corp.	202
	1/300—1/5	11	✓			Three Leaf	✓					Coupled Split Image	✓						International Research Corp.	203
	1/300—1/5	11	✓			Three Leaf	✓					Coupled Split Image	✓			✓			International Research Corp.	204
	1/1000—1/25	✓				Focal plane		✓				Coupled Split Image	✓	✓		✓	✓		International Photographic Industries, Inc.	205
Zeiss Ikon	1/1250—1/2	10	✓		✓	Focal plane	✓					Coupled Coincidence combined with viewfinder	✓	✓		✓	✓		Carl Zeiss, Inc.	206
Zeiss Ikon	1/1250—1/2	10	✓		✓	Focal plane	✓					Coupled Coincidence combined with viewfinder	✓	✓	✓		✓	✓	Carl Zeiss, Inc.	207
Vario	1/100—1/25	3	✓	✓	✓	Bet. Lens	✓						✓				✓		Burleigh Brooks, Inc.	208
Compur	1/300—1	8	✓	✓	✓	Bet. Lens	✓						✓				✓		Burleigh Brooks, Inc.	209
Compur	1/500—1	9	✓	✓	✓	Bet. Lens	✓					Coupled Split Image	✓		✓		✓		Burleigh Brooks, Inc.	210
Compur	1/500—1	9	✓	✓	✓	Bet. Lens	✓					Coupled Split Image	✓		✓	✓			Burleigh Brooks, Inc.	211
Compur	1/500—1	9	✓	✓	✓	Bet. Lens	✓					Coupled Split Image	✓		✓	✓			Burleigh Brooks, Inc.	212
Compur	1/500—1	9	✓	✓	✓	Bet. Lens	✓					Coupled Split Image	✓				✓		Burleigh Brooks, Inc.	213
Compur	1/500—1	9	✓	✓	✓	Bet. Lens	✓					Coupled Split Image	✓				✓		Burleigh Brooks, Inc.	214
	1/200—1/25	✓	✓	✓		Triple Leaf	✓						✓	✓					International Research Corp.	215
Compur	1/300—1	8	✓	✓	✓	Bet. Lens	✓						✓				✓		Photo Marketing Corp.	216
	1/200—1	5											✓						Eastman Kodak Co.	217
Leitz	1/500—1/20	7	✓	✓	✓	Focal plane	✓					Separate Coincidence	✓				✓		E. Leitz, Inc.	218
Leitz	1/500—1/20	7	✓	✓	✓	Focal plane	✓					Coupled Coincidence	✓				✓		E. Leitz, Inc.	219
Leitz	1/500—1	11	✓	✓	✓	Focal plane	✓					Coupled Coincidence	✓				✓		E. Leitz, Inc.	220
Leitz	1/1000—1	12	✓	✓	✓	Focal plane	✓					Coupled Coincidence	✓				✓		E. Leitz, Inc.	221
Leitz	1/1000—1	12	✓	✓	✓	Focal plane	✓					Coupled Coincidence	✓				✓		E. Leitz, Inc.	222

35. mm.

Line Number	Name of Camera	Price	FILM		Special Spool	LENS						Type	Interchangeable
			Negative Size (in inches)	Film Size		Make and Formula	Aperture	Aperture, smallest	Focal Length, inches	Focuses as close as			
223	Perfex 44	37.50	1x1½	35mm.		Gen. Scientific Corp.	f3.5	f22	2			Anastigmat	✓
224	Perfex 44	47.50	1x1½	35mm.		Gen. Scientific Corp.	f2.8	f22	2			Anastigmat	✓
225	Robot I	114.00	1x1	35mm.		Meyer Primotar	f3.5	f16	1¼	3'		Anastigmat	✓
226	Robot I	129.00	1x1	35mm.		Schneider Tele-Xenar	f5.5	f16	2	7'		Anastigmat	✓
227	Robot I	154.00	1x1	35mm.		Zeiss Tessar	f2.8	f16	1¼	21"		Anastigmat	✓
228	Robot II	154.00	1x1	35mm.		Zeiss Tessar	f3.5	f16	1¼	21"		Anastigmat	✓
229	Robot II	169.00	1x1	35mm.		Zeiss Tessar	f2.8	f16	1¼	21"		Anastigmat	✓
230	Robot II	219.00	1x1	35mm.		Zeiss Biotar	f2	f16	1¼	3½'		Anastigmat	✓
231	Super Baldina	69.50	1x1½	35mm.		Trioplan	f2.9	f16	2	3½'		Anastigmat	
232	Super Baldina	76.50	1x1½	35mm.		Trioplan	f2.9	f16	2	3½'		Anastigmat	
233	Super Baldina	95.00	1x1½	35mm.		Tessar	f2.8	f16	2	3½'		Anastigmat	
234	Super Baldina	97.50	1x1½	35mm.		Xenon	f2	f16	2	3½'		Anastigmat	
235	Super Rolls	13.95	1x1½	35mm.		Simpson Opt. Co.	f4.5	f18	2	3'		Anastigmat	
236	Super Rolls	17.95	1x1½	35mm.		Simpson Opt. Co.	f3.5	f18	2	3'		Anastigmat	
237	Tenax I	60.00	1x1	35mm.		Zeiss Novar	f3.5	f22	1¼	4'		Anastigmat	
238	Tenax II	207.00	1x1	35mm.		Zeiss Sonnar	f2	f22	1¼			Anastigmat	✓
239	Welti	79.00	1x1½	35mm.		Schneider Xenon	f2					Anastigmat	
240	Weltini	99.50	1x1½	35mm.		Zeiss Tessar	f2					Anastigmat	

## ROLL FILM CAMERAS

301	Agfa Clipper Special	15.50	2½x2½	PD16, 616			f6.3	f22		4'		Anastigmat	
302	Agfa Plenax Tripar	11.50	2½x3½	PB20, 620			f11	f32		5'		Rectilinear	
303	Agfa Plenax Tripar	13.00	2½x4½	PD16, 616			f11	f32		5'		Rectilinear	
304	Agfa Plenax Hypar	14.75	2½x3½	PB20, 620			f6.3	f32				Anastigmat	
305	Agfa Plenax Hypar	16.50	2½x4½	PD16, 616			f6.3	f32		5'		Anastigmat	
306	Baldaxette II	90.00	2½x2½	B2, 120		Trioplan	f2.9	f22	3	3½'		Anastigmat	
307	Baldaxette II	100.00	2½x2½	B2, 120		Tessar	f2.8	f16	3	3½'		Anastigmat	
308	Baldaxette II	107.00	2½x2½	B2, 120		Tessar	f2.8	f16	3	3½'		Anastigmat	

# Cameras (Continued)

Make	Shutter				Type	View-finder				Range Finder	Features							Source	Line Number
	Speed Range Slowest and fastest shutter speeds (in inches)	No. of Speeds	Bulb Time	Cable Release		Waist level brilliant	Eye level telescopic	Eye level optical folding	Folding wire frame		Ground glass	Tripod Socket	Built-in Exposure Meter	Self-timer	Parallax adjustment	Synchronizer terminal	Auto Film Transport		
Perflex	1/1250—1	✓	✓	✓	Focal plane	✓				Coupled Split Image	✓	✓			✓	✓	Candid Camera Corp. of America	223	
Perflex	1/1250—1	✓	✓	✓	Focal plane	✓				Coupled Split Image	✓	✓			✓	✓	Candid Camera Corp. of America	224	
Robot	1/500—1	9	✓	✓	Rotary	✓					✓				✓	✓	Intercontinental Marketing Corp.	225	
Robot	1/500—1	9	✓	✓	Rotary	✓					✓				✓	✓	Intercontinental Marketing Corp.	226	
Robot	1/500—1	9	✓	✓	Rotary	✓					✓				✓	✓	Intercontinental Marketing Corp.	227	
Robot	1/500—½	8	✓	✓	Focal plane	✓					✓				✓	✓	Intercontinental Marketing Corp.	228	
Robot	1/500—½	8	✓	✓	Focal plane	✓					✓				✓	✓	Intercontinental Marketing Corp.	229	
Robot	1/500—½	8	✓	✓	Focal plane	✓					✓				✓	✓	Intercontinental Marketing Corp.	230	
Compur	1/300—1	8	✓	✓	Between Lens	✓				Coupled Split Image	✓		✓		✓		Photo Marketing Corp.	231	
Compur	1/500—1	9	✓	✓	Between Lens	✓				Coupled Split Image	✓		✓		✓		Photo Marketing Corp.	232	
Compur	1/500—1	9	✓	✓	Between Lens	✓				Coupled Split Image	✓		✓		✓		Photo Marketing Corp.	233	
Compur	1/500—1	9	✓	✓	Between Lens	✓				Coupled Split Image	✓		✓		✓		Photo Marketing Corp.	234	
Rolls	1/200—1/25	4	✓	✓	Three Leaf	✓					✓						Rolls Camera Mfg. Co.	235	
Rolls	1/200—1/25	4	✓	✓	Three Leaf	✓					✓						Rolls Camera Mfg. Co.	236	
Compur	1/300—1	8	✓	✓	Bet. Lens		✓				✓				✓	✓	Carl Zeiss, Inc.	237	
Compur Rapid	1/400—1	9	✓	✓	Behind Lens	✓				Coupled Coincidence combined with viewfinder	✓	✓			✓	✓	Carl Zeiss, Inc.	238	
Compur	1/300—1		✓	✓		✓					✓		✓				Burke & James	239	
Compur Rapid	1/500—1		✓	✓						Coupled	✓		✓				Burke & James	240	

## OTHER THAN 35 MM.

	1/100—1/25	3	✓	✓	Bet. Lens	✓						✓						Agfa Ansco Corp.	301
	1/100—1/25	3	✓	✓	Bet. Lens	✓		✓				✓						Agfa Ansco Corp.	302
	1/100—1/25	3	✓	✓	Bet. Lens	✓		✓										Agfa Ansco Corp.	303
	1/100—1/25	3	✓	✓	Bet. Lens	✓	✓					✓						Agfa Ansco Corp.	304
	1/100—1/25	3	✓	✓	Bet. Lens	✓	✓					✓						Agfa Ansco Corp.	305
Compur	1/400—1	9	✓	✓	Between Lens	✓					Coupled Split Image	✓	✓	✓	✓			Photo Marketing Corp.	306
Compur	1/250—1	8	✓	✓	Between Lens	✓					Coupled Split Image	✓	✓	✓	✓			Photo Marketing Corp.	307
Compur	1/400—1	9	✓	✓	Between Lens	✓					Coupled Split Image	✓	✓	✓	✓			Photo Marketing Corp.	308

# Roll Film Cameras

Line Number	Name of Camera	Price	FILM			LENS						Interchangeable
			Negative Size (in inches)	Film Size	Special Spool	Make and Formula	Aperture	Aperture, smallest	Focal Length, inches	Focuses as close as	Type	
309	Baldax Square	51.00	2¼x2¼	B2, 120		Trioplan	f2.9	f22	3	5'	Anastigmat	
310	Baldax Square	58.00	2¼x2¼	B2, 120		Trioplan	f2.9	f22	3	5'	Anastigmat	
311	Certix	15.00	2¼x3¼	B2, 120		Certar	f6.3	f22	4½	3½'	Anastigmat	
312	Certix	18.75	2¼x3¼	B2, 120		Certar	f4.5	f22	4½	3½'	Anastigmat	
313	Certix	28.50	2¼x3¼	B2, 120		Certar	f4.5	f22	4½	4'	Anastigmat	
314	Certix	46.00	2¼x3¼	B2, 120		Zeiss Tessar	f4.5	f22	4½	4'	Anastigmat	
315	Dehel	17.75	2¼x3¼	B2, 120		Rysoor	f4.5	f32	4½	7'	Anastigmat	
316	Detrola D	15.00	1¼x1¼	A8, 127		Wollensak	f4.5	f22	2		Anastigmat	
317	Detrola E	19.50	1¼x1¼	A8, 127		Wollensak	f3.5	f22	2		Anastigmat	
318	Detrola G	9.95	1¼x1¼	A8, 127		Wollensak	f4.5	f22	2	3'	Anastigmat	
319	Detrola H	12.50	1¼x1¼	A8, 127		Wollensak	f4.5	f22	2		Anastigmat	
320	Detrola K	17.50	1¼x1¼	A8, 127		Wollensak	f3.5	f22	2		Anastigmat	
321	Dolly V. P.	17.50	1¼x1¼	A8, 127		Certar	f4.5	f22	3	3'	Anastigmat	
322	Dolly V. P.	29.50	1¼x1¼	A8, 127		Corygon	f3.5	f16	3	3½'	Anastigmat	
323	Falcon Candid F	17.50	1¼x1¼	A8, 127		Wollensak	f4.5	f22	2		Anastigmat	
324	Falcon Candid FE	19.50	1¼x1¼	A8, 127		Wollensak	f4.5	f22	2		Anastigmat	
325	Falcon Candid G	21.50	1¼x1¼	A8, 127		Wollensak	f3.5	f22	2		Anastigmat	
326	Falcon Candid GE	23.50	1¼x1¼	A8, 127		Wollensak	f3.5	f22	2	4'	Anastigmat	
327	Foth Derby	21.50	1¼x1¼	A8, 127		Foth	f3.5	f18	2	3½'	Anastigmat	
328	Foth Derby	27.50	1¼x1¼	A8, 127		Foth	f2.5	f18	2	2½'	Anastigmat	
329	Garant	39.50	1¼x2¼	B2, 120		Meyer Trioplan	f4.5				Anastigmat	
330	Garant	46.50	1¼x2¼	B2, 120		Rodenstock Trinar	f3.8				Anastigmat	
331	Gewirette	26.50	1¼x1¼	A8, 127			f3.5				Anastigmat	✓
332	Ihagee Auto Ultrix	18.50	1¼x2¼	B2, 120		Ihagee	f4.5	f16	4½		Anastigmat	
333	Ihagee Auto Ultrix	35.00	1¼x2¼	B2, 120		Ihagee	f4.5	f32		7½'	Anastigmat	
334	Ihagee Auto Ultrix	46.00	1¼x2¼	B2, 120		Zeiss Tessar	f4.5	f32	4½	7½'	Anastigmat	
335	Ihagee Auto Ultrix V. P.	22.50	1¼x1¼	A8, 127		Ihagee	f4.5	f16	2½	3'	Anastigmat	
336	Ihagee Auto Ultrix V. P.	33.00	1¼x1¼	A8, 127		Ihagee	f3.5	f16	2½	3'	Anastigmat	
337	Ikonta A Special	72.00	1¼x2¼	B2, 120		Zeiss	f3.5	f22	3	4'	Anastigmat	
338	Ikonta B	44.00	2¼x2¼	B2, 120		Zeiss	f4.5	f22	3		Anastigmat	
339	Ikonta B	56.00	2¼x2¼	B2, 120		Zeiss	f3.5	f22	3		Anastigmat	
340	Iris Deluxe	7.50	1¼x1½	Univex No. 00	✓	Vitar	f7.9	f22	2	4'	Doublet	
341	Iris Flash Deluxe	8.50	1¼x1½	Univex No. 00	✓	Vitar	f7.9	f22	2	4'	Doublet	
342	Jiffy Kodak Six-16, Series II	8.25	2¼x4¼	PD16, 616		Twindar	f11		5			

# Other than 35 mm. (continued)

Make	Shutter					View-finder					Range Finder	Features							Source	Line Number
	Speed Range Slowest and fastest shutter speeds (in inches)	No. of Speeds	Bulb	Time	Cable Release	Type	Waist level brilliant	Eye level telescopic	Eye level optical folding	Folding wire frame		Ground glass	Tripod Socket	Built-in Exposure Meter	Self-timer	Parallax adjustment	Synchronizer terminal	Auto Film Transport		
Compur	1/250—1	8	✓	✓	✓	Bet. Lens	✓					✓		✓	✓	✓			Photo Marketing Corp.	309
Compur	1/400—1	9	✓	✓	✓	Bet. Lens	✓					✓		✓	✓	✓			Photo Marketing Corp.	310
Vario	1/100—1/25	3	✓	✓	✓	Bet. Lens	✓			✓		✓		✓	✓				Burleigh Brooks, Inc.	311
Vario	1/100—1/25	3	✓	✓	✓	Bet. Lens	✓			✓		✓		✓	✓				Burleigh Brooks, Inc.	312
Compur	1/250—1	8	✓	✓	✓	Bet. Lens	✓			✓		✓		✓	✓				Burleigh Brooks, Inc.	313
Compur	1/250—1	8	✓	✓	✓	Bet. Lens	✓			✓		✓		✓	✓				Burleigh Brooks, Inc.	314
Dehel	1/150—1/25	4	✓	✓	✓	Bet. Lens	✓			✓		✓	✓						Reich-Hela Corp.	315
Wollensak	1/200—1/25		✓	✓	✓	Bet. Lens	✓					✓	✓						Detrola Corp.	316
Wollensak	1/200—1/25		✓	✓	✓	Bet. Lens	✓					✓	✓						Detrola Corp.	317
Wollensak	1/200—1/25		✓	✓	✓	Bet. Lens	✓					✓							Detrola Corp.	318
Wollensak	1/200—1/25		✓	✓	✓	Bet. Lens	✓					✓	✓						Detrola Corp.	319
Wollensak	1/200—1/25		✓	✓	✓	Bet. Lens	✓					✓	✓						Detrola Corp.	320
Vario	1/100—1/25	3	✓	✓	✓	Bet. Lens			✓			✓							Burleigh Brooks, Inc.	321
Compur	1/300—1	8	✓	✓	✓	Bet. Lens			✓			✓							Burleigh Brooks, Inc.	322
Wollensak	1/200—1/25	4	✓	✓	✓	Rotary						✓							Utility Mfg. Co., Inc.	323
Wollensak	1/200—1/25	4	✓	✓	✓	Rotary						✓	✓						Utility Mfg. Co., Inc.	324
Wollensak	1/200—1/25	4	✓	✓	✓	Rotary						✓							Utility Mfg. Co., Inc.	325
Wollensak	1/200—1/25	4	✓	✓	✓	Rotary						✓	✓						Utility Mfg. Co., Inc.	326
Foth	1/200—1/25		✓		✓	Focal plane	✓					✓		✓					Burleigh Brooks, Inc.	327
Foth	1/200—1/25		✓		✓	Focal plane	✓					✓		✓					Burleigh Brooks, Inc.	328
Compur	1/250—1	9	✓	✓	✓	Between lens						✓		✓	✓				Burke & James	329
Compur Rapid	1/400—1	9	✓	✓	✓							✓		✓	✓				Burke & James	330
Compur	1/300																		Manhattan Camera Co.	331
Zenith	1/100—1/25		✓	✓	✓		✓	✓				✓							Medo Photo Sup. Corp.	332
Compur	1/250—1		✓	✓	✓		✓	✓				✓							Medo Photo Sup. Corp.	333
Compur	1/250—1		✓	✓	✓		✓	✓				✓							Medo Photo Sup. Corp.	334
Prontar	1/125—1/25	4	✓	✓	✓			✓				✓							Medo Photo Sup. Corp.	335
Compur	1/300—1		✓	✓	✓							✓							Medo Photo Sup. Corp.	336
Compur Rapid	1/500—1	9	✓		✓	Between Lens		✓				✓							Carl Zeiss, Inc.	337
Zeiss Klio	1/175—1	8	✓		✓	Bet. Lens		✓				✓		✓					Carl Zeiss, Inc.	338
Compur	1/300—1	8	✓		✓	Bet. Lens		✓				✓							Carl Zeiss, Inc.	339
Univex	*Instan.	1	✓	✓	✓	Behind Lens	✓					✓							Universal Camera Corp.	340
Univex	*Instan.	1	✓	✓	✓	Behind Lens	✓					✓					✓		Universal Camera Corp.	341
	*Instan.	1		✓			✓												Eastman Kodak Co.	342

# Roll Film Cameras

Line Number	Name of Camera	Price	FILM			LENS						Interchangeable
			Negative Size (in inches)	Film Size	Special Spool	Make and Formula	Aperture	Aperture, smallest	Focal Length, inches	Focuss as close as	Type	
343	Kodak. Bantam Special	87.50	1½x1½	828		Kodak Ektar	f2				Anastigmat	
344	Mercury	25.00	¾x1	Univex No. 00	✓	Wollensak	f3.5	f22	1¾	18"	Anastigmat	✓
345	Mercury	29.75	¾x1	Univex No. 00	✓	Wollensak	f3.5	f22	1¾	18"	Anastigmat	✓
346	Nettar A	30.00	1½x2¼	B2, 120		Zeiss Nettar	f4.5	f22	3		Anastigmat	
347	Nettar C	20.00	2¼x3¼	B2, 120		Zeiss Nettar	f6.3	f22	4½		Anastigmat	
348	Parvola A	40.00	1½x1½	A8, 127		Ihagee	f3.5	f11	2		Anastigmat	
349	Parvola A	50.00	1½x1½	A8, 127		Zeiss Tessar	f3.5	f11	2		Anastigmat	
350	Parvola A	75.00	1½x1½	A8, 127		Schneider Xenon	f2	f11	2		Anastigmat	
351	Precisa	45.00	2¼x2¼	B2, 120		Rodenstock	f2.9	f22	3	3'	Anastigmat	
352	Rifax	72.50	2¼x2¼	B2, 120		Rodenstock	f2.9	f22	3	3'	Anastigmat	
353	Rigona	20.00	1½x1½	A8, 127		Vidanar	f4.5	f16	2	3½'	Anastigmat	
354	Rigona	30.00	1½x1½	A8, 127		Radionar	f2.9	f16	2	3½'	Anastigmat	
355	Super Ikonta A, Special	118.00	1½x2¼	B2, 120		Zeiss	f3.5	f22	3		Anastigmat	
356	Super Ikonta B	160.00	2¼x2¼	B2, 120		Zeiss	f2.8	f22	3¼	5'	Anastigmat	
357	Super Ikonta C, Special	138.00	2¼x3¼	B2, 120		Zeiss	f3.5	f22	4¼	5'	Anastigmat	
358	Super Rolls	8.95	1½x2¼	PB20,620		Simpson Optical Co.	f7.7	f22	2½	3'	Achromatic Meniscus	
359	Super Sport Dolly, New	75.00	1½x2¼	B2, 120		Schneider Xenar	f2.8	f22	3	4'	Anastigmat	
360	Super Sport Dolly, New	80.50	1½x2¼	B2, 120		Schneider Xenar	f2.8	f22	3	4'	Anastigmat	
361	Super Sport Dolly, New	86.00	1½x2¼	B2, 120		Zeiss Tessar	f2.8	f22	3	4'	Anastigmat	
362	Super Sport Dolly, New	91.50	1½x2¼	B2, 120		Zeiss Tessar	f2.8	f22	3	4'	Anastigmat	
363	Super Sport Dolly, Standard	45.00	1½x2¼	B2, 120		Meyer Trioplan	f2.9	f16	3	4'	Anastigmat	
364	Super Sport Dolly, Standard	63.00	1½x2¼	B2, 120		Schneider Xenar	f2.8	f16	3	4'	Anastigmat	
365	Super Sport Dolly, Standard	75.00	1½x2¼	B2, 120		Zeiss Tessar	f2.8	f22	3	4'	Anastigmat	
366	Utilo	15.00	2¼x3¼	B2, 120		Meyer Trioplan	f4.5	f22	4	5'	Anastigmat	



# Other than 35 mm. (continued)

Shutter					View-finder				Range Finder	Features						Source	Line Number		
Make	Speed Range Slowest and fastest shutter speeds (in inches)	No. of Speeds	Bulb Time	Cable Release	Type	Waist level brilliant	Eye level telescopic	Eye level optical folding		Folding wire frame	Ground glass	Tripod Socket	Built-in Exposure Meter	Self-timer	Parallax adjustment			Synchronizer terminal	Auto Film Transport
Compur Rapid	1/500—1		✓	✓	✓							Coupled	✓				✓	Eastman Kodak Co.	343
Univex	1/1000—1/20	8	✓	✓	✓	Focal plane	✓					Separate	✓		✓	✓	✓	Universal Camera Corp.	344
Univex	1/1500—1/20	8	✓	✓	✓	Focal plane	✓					Separate	✓		✓	✓	✓	Universal Camera Corp.	345
Zeiss Klio	1/175—1	8	✓		✓	Between lens		✓					✓	✓				Carl Zeiss, Inc.	346
Zeiss Telma	1/125—1/25	4	✓	✓	✓	Between lens		✓					✓	✓				Carl Zeiss, Inc.	347
Compur	1/300—1		✓	✓	✓	Between lens		✓					✓	✓				Henry Herbert	348
Compur	1/300—1		✓	✓	✓	Between lens		✓					✓	✓				Henry Herbert	349
Compur	1/400—1		✓	✓	✓	Between lens		✓					✓	✓				Henry Herbert	350
Compur	1/250—1		✓	✓	✓	Between lens		✓					✓	✓				Mimosa American Corp.	351
Compur Rapid	1/400—1		✓	✓	✓	Between lens		✓				Coupled, Split image	✓	✓				Mimosa American Corp.	352
Vario	1/100—1/25	3	✓	✓	✓	Between lens	✓						✓					Photo Marketing Corp.	353
Prontor	1/175—1	8	✓	✓	✓	Between lens	✓						✓	✓				Photo Marketing Corp.	354
Compur Rapid	1/500—1	10	✓			Between lens		✓				Coupled Coincidence	✓					Carl Zeiss, Inc.	355
Compur Rapid	1/400—1	9	✓		✓	Between lens	✓					Coupled Coincidence combined with view-finder	✓	✓		✓		Carl Zeiss, Inc.	356
Compur Rapid	1/400—1	9	✓		✓	Between lens		✓				Coupled, Coincidence	✓	✓				Carl Zeiss, Inc.	357
Rolls	*Instan.	1	✓	✓		Three leaf	✓						✓					Rolls Camera Mfg. Co.	358
Compur	1/250—1	8	✓	✓	✓	Between lens	✓					Coupled, Split image	✓	✓	✓			Burleigh Brooks, Inc.	359
Compur Rapid	1/400—1	9	✓	✓	✓	Between lens	✓					Coupled, Split image	✓	✓	✓			Burleigh Brooks, Inc.	360
Compur	1/250—1	8	✓	✓	✓	Between lens	✓					Coupled, Split image	✓	✓	✓			Burleigh Brooks, Inc.	361
Compur Rapid	1/400—1	9	✓	✓	✓	Between lens	✓					Coupled, Split image	✓	✓	✓			Burleigh Brooks, Inc.	362
Compur	1/250—1	8	✓	✓	✓	Between lens		✓					✓	✓				Burleigh Brooks, Inc.	363
Compur	1/250—1	8	✓	✓	✓	Between lens		✓					✓	✓				Burleigh Brooks, Inc.	364
Compur	1/250—1	8	✓	✓	✓	Between lens		✓					✓	✓				Burleigh Brooks, Inc.	365
Vario	1/100—1/25	3	✓	✓	✓	Between lens	✓						✓					Photo Utilities, Inc.	366

## Roll Film Cameras

Line Number	Name of Camera	Price	FILM			LENS						Interchangeable
			Negative Size (in inches)	Film Size	Special Spool	Make and Formula	Aperture	Aperture, smallest	Focal Length, inches	Focuses as close as	Type	
367	Utilo	18.00	2¼x3¼	B2, 120		Meyer Trioplan	f4.5	f22	4	5'	Anastigmat	
368	Voigtlander, Baby Bessa, Jr.	27.50	2¼x2¼	B2, 120		Voigtlander Voigtar	f3.5	f16	3		Anastigmat	
369	Voigtlander, Baby Bessa	45.00	2¼x2¼	B2, 120		Voigtlander Voigtar	f3.5	f16	3		Anastigmat	
370	Voigtlander, Baby Bessa	55.00	2¼x2¼	B2, 120		Voigtlander Skopar	f3.5	f16	3		Anastigmat	
371	Vokar Vario Coupled	15.00	2¼x2¼	B2, 120		Ilex-Vokar	f6.3	f16	3	3½'	Anastigmat	
372	Voran	52.50	2¼x3¼	B2, 120		Rodenstock	f3.5	f22	4		Anastigmat	
373	Welta Perle	32.00	1½x2¼	B2, 120		Meyer Trioplan	f4.5				Anastigmat	
374	Welta Perle	48.50	1½x2¼	B2, 120		Steinheil Cassar	f2.9				Anastigmat	
375	Welta Perle	67.50	1½x2¼	B2, 120		Zeiss Tessar	f2.8		3		Anastigmat	
376	Weltax	53.50	2¼x2¼	B2, 120		Steinheil Cassar	f2.9				Anastigmat	
377	Weltax	72.50	2¼x2¼	B2, 120		Zeiss Tessar	f2.8				Anastigmat	
378	Weltax	77.50	2¼x2¼	B2, 120		Zeiss Tessar	f2.8				Anastigmat	
379	Weltur	85.00	2¼x2¼	B2, 120		Steinheil Cassar	f2.9				Anastigmat	
380	Weltur	96.00	2¼x2¼	B2, 120		Schneider Xenar	f2.8				Anastigmat	
381	Weltur	115.00	2¼x2¼	B2, 120		Zeiss Tessar	f2.8				Anastigmat	
382	Zenith Flash	15.00	1½x1½	Univex No. 00	✓	Univex	f4.5	f16	2	3½'	Anastigmat	
383	Zenith Standard	12.50	1½x1½	Univex No. 00	✓	Univex	f4.5	f16	2	3½'	Anastigmat	

## MIRROR (SINGLE LENS)

401	Beier-Flex	62.00	2¼x2¼	B2, 120		Victar	f3.5	f16	3		Anastigmat	✓
402	Exakta B	100.00	1½x2¼	A8, 127		Exaktar	f3.5	f22	3	4'	Anastigmat	✓
403	Exakta B	120.00	1½x2¼	A8, 127		Primotar	f3.5	f22	3	4'	Anastigmat	✓
404	Exakta B	130.00	1½x2¼	A8, 127		Tessar	f3.5	f22	3	4'	Anastigmat	✓
405	Exakta B	150.00	1½x2¼	A8, 127		Tessar	f2.8	f22	3	4'	Anastigmat	✓
406	Exakta C	115.00	1½x2¼	A8, 127		Exaktar	f3.5	f22	3	4'	Anastigmat	✓
407	Exakta C	135.00	1½x2¼	A8, 127		Primotar	f3.5	f22	3	4'	Anastigmat	✓
408	Exakta C	145.00	1½x2¼	A8, 127		Tessar	f3.5	f22	3	4'	Anastigmat	✓
409	Exakta C	165.00	1½x2¼	A8, 127		Tessar	f2.8	f22	3	4'	Anastigmat	
410	Exakta, Jr.	70.00	1½x2¼	A8, 127		Ihagee	f3.5	f22	3	3'	Anastigmat	
411	Exakta, Kine	130.00	1x1½	35mm.		Ihagee Exaktar	f3.5	f22	2-1/10		Anastigmat	✓

# Other than 35 mm. (continued)

Make	Shutter				Type	View-finder				Range Finder	Features							Source	Line Number
	Speed Range Slowest and fastest shutter speeds (in inches)	No. of Speeds	Bulb	Time		Waist level brilliant	Eye level telescopic	Eye level optical folding	Folding wire frame		Tripod Socket	Built-in Exposure Meter	Self-timer	Parallax adjustment	Synchronizer terminal	Auto Film Transport	Slim. Film—Shutter		
Prontor II	1/150—1	7	✓	✓	✓	Between lens	✓				✓	✓						Photo Utilities, Inc.	367
Prontor II	1/175—1	8	✓	✓	✓	Between lens		✓			✓	✓						Willoughby's	368
Compur	1/300—1	8	✓	✓	✓	Between lens	✓				✓							Willoughby's	369
Compur	1/300—1	8	✓	✓	✓	Between lens	✓				✓							Willoughby's	370
Ilex-Vokar	1/100—1/25		✓	✓	✓	Between lens		✓			✓							Electronic Products Mfg. Corp.	371
Compur Rapid	1/400—1		✓	✓	✓	Between lens		✓			✓	✓						Mimosa American Corp.	372
Prontor II	1/150—1		✓	✓		Between lens								✓				Burke & James	373
Compur Rapid	1/400—1	9	✓	✓	✓	Between lens								✓				Burke & James	374
Compur Rapid	1/400—1	9	✓	✓	✓	Between lens								✓				Burke & James	375
Compur Rapid	1/400—1	9	✓	✓	✓	Between lens						✓	✓					Burke & James	376
Compur	1/250—1	9	✓	✓	✓	Between lens						✓	✓					Burke & James	377
Compur Rapid	1/400—1	9	✓	✓	✓	Between lens						✓	✓					Burke & James	378
Compur	1/300—1	9	✓	✓	✓	Between lens				Coupled		✓	✓					Burke & James	379
Compur Rapid	1/400—1	9	✓	✓	✓	Between lens				Coupled		✓	✓					Burke & James	380
Compur Rapid	1/400—1	9	✓	✓	✓	Between lens				Coupled		✓	✓					Burke & James	381
Univex Precise	1/200—1/25	4	✓	✓	✓	Between lens	✓				✓			✓				Universal Camera Corp.	382
Univex Precise	1/200—1/25	4	✓	✓	✓	Between lens	✓				✓							Universal Camera Corp.	383

## REFLEX CAMERAS

	1/500—1/25	5	✓	✓	✓	Focal plane		✓	✓		✓			✓	✓			Mimosa American Corp.	401
	1/1000—12	20	✓	✓	✓	Focal plane			✓	✓	✓	✓		✓	✓			Photo Marketing Corp.	402
	1/1000—12	20	✓	✓	✓	Focal plane			✓	✓	✓	✓		✓	✓			Photo Marketing Corp.	403
	1/1000—12	20	✓	✓	✓	Focal plane			✓	✓	✓	✓		✓	✓			Photo Marketing Corp.	404
	1/1000—12	20	✓	✓	✓	Focal plane			✓	✓	✓	✓		✓	✓			Photo Marketing Corp.	405
	1/1000—12	20	✓	✓	✓	Focal plane			✓	✓	✓	✓		✓	✓			Photo Marketing Corp.	406
	1/1000—12	20	✓	✓	✓	Focal plane			✓	✓	✓	✓		✓	✓			Photo Marketing Corp.	407
	1/1000—12	20	✓	✓	✓	Focal plane			✓	✓	✓	✓		✓	✓			Photo Marketing Corp.	408
	1/1000—12	20	✓	✓	✓	Focal plane			✓	✓	✓	✓		✓	✓			Photo Marketing Corp.	409
	1/500—1/25	7	✓	✓	✓	Focal plane			✓	✓	✓		✓	✓				Photo Marketing Corp.	410
	1/1000—12	20	✓	✓	✓	Focal plane			✓	✓	✓	✓		✓	✓			Photo Marketing Corp.	411

# Mirror (Single Lens)

Line Number	Name of Camera	Price	FILM			LENS						Interchangeable
			Negative Size (in inches)	Film Size	Special Spool	Make and Formula	Aperture	Aperture, smallest	Focal Length, inches	Focusses as close as	Type	
412	Exakta Kine	145.00	1x1½	35mm.		Primotar	f1.5	f22	2-1/10	3'	Anastigmat	✓
413	Exakta Kine	155.00	1x1½	35mm.		Tessar	f1.5	f22	2	2½'	Anastigmat	✓
414	Exakta Kine	175.00	1x1½	35mm.		Tessar	f2.8	f22	2	2½'	Anastigmat	✓
415	Exakta, Kine-Night	290.00	1x1½	35mm.		Biotar	f2	f22	2½	2½'	Anastigmat	✓
416	Exakta, Night B	290.00	1¼x2½	A8, 127		Biotar	f2	f22	8	4'	Anastigmat	✓
417	Graflex, Auto, Revolving Back	165.50	3¼x4¼†	51	✓	Kodak	f4.5	f32	7½	13½"	Anastigmat	✓
418	Graflex, Auto, Revolving Back	242.50	4x5 †	53	✓	Kodak	f4.5	f32	10	21"	Anastigmat	✓
419	Graflex, Series B Revolving Back	91.00	2½x3¼	‡ †		Kodak	f4.5	f32	5½	21"	Anastigmat	
420	Graflex, Series B Revolving Back	107.00	3¼x4¼†	51	✓	Kodak	f4.5	f32	6¾	23"	Anastigmat	
421	Graflex, Series B Revolving Back	128.00	4x5 †	53	✓	Kodak	f4.5	f32	7½	24"	Anastigmat	
422	Graflex, Series B	178.50	5x7 †	54	✓	Kodak	f4.5	f32	8½	32"	Anastigmat	✓
423	Graflex, Series D Revolving Back	133.00	3¼x4¼†	51	✓	Kodak	f4.5	f32	6¾	25"	Anastigmat	
424	Graflex, Series D Revolving Back	157.00	4x5 †	53	✓	Kodak	f4.5		6¾		Anastigmat	✓
425	Graflex, Revolving Back Home Portrait	350.00	5x7	54		Kodak	f4.5		10		Anastigmat	✓
426	National Graflex II	87.50	2¼x2½	B2, 120		Bausch & Lomb	f3.5	f22	3	40"	Anastigmat	✓
427	Korelle-Reflex II	145.00	2¼x2¼	B2, 120		Zeiss Tessar	f2.8		3¼		Anastigmat	✓
428	K. W. Reflex	15.00	2¼x3¼	B2, 120		Kamera Werkstätten	f6.3	f16	4½	7'	Anastigmat	
429	K. W. Reflex	23.50	2¼x3¼	B2, 120		Kamera Werkstätten	f4.5	f16	4½	5'	Anastigmat	
430	Pilot 6	16.00	2¼x2¼	B2, 120		Kamera Werkstätten	f6.3	f16	3	3'	Anastigmat	
431	Pilot Super	37.50	2¼x2¼	B2, 120		Kamera Werkstätten	f4.5	f16	3	3'	Anastigmat	✓
432	Pilot Super	50.00	2¼x2¼	B2, 120		Kamera Werkstätten	f3.5	f16	3	3'	Anastigmat	✓
433	Pilot Super	60.00	2¼x2¼	B2, 120		Kamera Werkstätten	f2.9	f16	3	3'	Anastigmat	✓
434	Primarflex	140.00	2¼x2¼	B2, 120		Meyer	f3.5	f22	3¼	3'	Anastigmat	✓
435	Primarflex	175.00	2¼x2¼	B2, 120		Zeiss	f3.5	f22	4	3'	Anastigmat	

† Takes roll film, film packs, cut film, and plates (roll film numbers only given).

‡ Uses film packs, cut film, and plates only.

## DUAL-LENS

501	Ikolox III	\$199.00	2 1/2x2 1/4	B2, 120		Zeiss	f2.8	f22	3 1/4	4'	Anastigmat	
502	Rolleicord 1A	77.50	2 1/2x2 1/4	B2, 120		Zeiss Triotar	f4.5	f32	3	32"	Anastigmat	

## Reflex Cameras (continued)

Shutter						View-finder		Range Finder	Features						Source	Line Number				
Make	Speed Range Slowest and fastest shutter speeds (in inches)	No. of Speeds	Bulb Time	Cable Release	Type	Waist level brilliant	Eye level telescopic		Eye level optical folding	Folding wire frame	Ground glass	Tripod Socket	Built-in Exposure Meter	Self-timer			Parallax adjustment	Synchronizer terminal	Auto Film Transport	Sim. Film-Shutter
	1/1000—12	20	✓	✓	Focal plane			✓	✓			✓	✓		✓	✓	✓	✓	Photo Marketing Corp.	412
	1/1000—12	20	✓	✓	Focal plane			✓	✓			✓	✓		✓	✓	✓	✓	Photo Marketing Corp.	413
	1/1000—12	20	✓	✓	Focal plane			✓	✓			✓	✓		✓	✓	✓	✓	Photo Marketing Corp.	414
	1/1000—12	20	✓	✓	Focal plane			✓	✓			✓	✓		✓	✓	✓	✓	Photo Marketing Corp.	415
	1/1000—12	20	✓	✓	Focal plane			✓	✓			✓	✓		✓	✓	✓	✓	Photo Marketing Corp.	416
Graflex	1/1000—1/5	25		✓	Focal plane			✓				✓							Folmer Graflex Corp.	417
Graflex	1/1000—1/5	25		✓	Focal plane			✓				✓							Folmer Graflex Corp.	418
Graflex	1/1000—1/5	25		✓	Focal plane			✓				✓							Folmer Graflex Corp.	419
Graflex	1/1000—1/5	25		✓	Focal plane			✓				✓							Folmer Graflex Corp.	420
Graflex	1/1000—1/5	25		✓	Focal plane			✓				✓							Folmer Graflex Corp.	421
Graflex	1/1000—1/5	25		✓	Focal plane			✓				✓							Folmer Graflex Corp.	422
Graflex	1/1000—1/5	25		✓	Focal plane			✓				✓							Folmer Graflex Corp.	423
Graflex	1/1000—1/5	25		✓	Focal plane			✓				✓							Folmer Graflex Corp.	424
Graflex	1/1000—1/10	24		✓	✓	Focal plane	✓		✓	✓	Coupled Coincidence	✓		✓	✓	✓			Folmer Graflex Corp.	425
Graflex	1/500—1/30	8	✓		✓	Focal plane			✓			✓							Folmer Graflex Corp.	426
	1/500—2	11	✓			Focal plane			✓			✓				✓			Burke & James	427
K. W.	1/100—1/25	3	✓	✓	✓	Focal plane			✓	✓		✓							Burleigh Brooks, Inc.	428
K. W.	1/100—1/25	3	✓	✓	✓	Focal plane			✓	✓		✓							Burleigh Brooks, Inc.	429
K. W.	1/150—1/20	4	✓	✓	✓	Focal plane			✓	✓		✓							Burleigh Brooks, Inc.	430
K. W.	1/200—1/20	4	✓	✓	✓	Focal plane			✓	✓		✓	✓						Burleigh Brooks, Inc.	431
K. W.	1/200—1/20	4	✓	✓	✓	Focal plane			✓	✓		✓	✓						Burleigh Brooks, Inc.	432
K. W.	1/200—1/20	4	✓	✓	✓	Focal plane			✓	✓		✓	✓						Burleigh Brooks, Inc.	433
Bentsin	1/1000—1		✓	✓	✓	Focal plane			✓	✓		✓	✓			✓	✓		Mimosa American Corp.	434
Bentsin	1/1000—1		✓	✓	✓	Focal plane			✓	✓		✓	✓			✓	✓		Mimosa American Corp.	435

## REFLEX CAMERAS

Compur Rapid	1/400-1	9	✓	✓		Between Lens		✓	✓			✓	✓	✓	✓				Carl Zeiss, Inc.	501
Compur	1/300-1	8	✓	✓	✓	Between Lens			✓	✓		✓		✓					Burleigh Brooks, Inc.	502

## Dual-Lens Reflex

Line Number	Name of Camera	Price	FILM			LENS						Interchangeable
			Negative Size (in inches)	Film Size	Special Spool	Make and Formula	Aperture	Aperture, smallest	Focal Length, inches	Focuses as close as	Type	
503	Rolleicord II	103.50	2½x2¼	B2, 120		Zeiss Triotar	f3.5	f22	3	32"	Anastigmat	
504	Rolleiflex, Automatic	205.00	2½x2¼	B2, 120		Zeiss Tessar	f3.5	f22	3	32"	Anastigmat	
505	Rolleiflex, Standard	172.50	2½x2¼	B2, 120		Zeiss Tessar	f3.5	f22	3	32"	Anastigmat	
506	Rolleiflex, 4x4	165.00	1½x1½	A8, 127		Zeiss Tessar	f2.8	f22	2½	34"	Anastigmat	
507	Super Tri-Reflex	25.00	1½x1½	A8, 127		Wollensak	f4.5	f22	2	4'	Anastigmat	
508	Super Tri-Reflex	30.00	1½x1½	A8, 127		Wollensak	f3.5	f22	2	4'	Anastigmat	
509	Voigtlander, Focusing Brilliant	48.50	2½x2¼	B2, 120		Voigtlander Voigtar	f4.5	f16	3		Anastigmat	
510	Voigtlander, Focusing Brilliant	52.50	2½x2¼	B2, 120		Voigtlander Voigtar	f3.5	f16	3		Anastigmat	
511	Voigtlander, Focusing Brilliant	63.50	2½x2¼	B2, 120		Voigtlander Skopar	f3.5	f16	3		Anastigmat	

## VIEW

601	Bee Bee A	65.00	2½x3½			Radionar	f4.5	f22	4½	3'	Anastigmat	✓
602	Bee Bee A	78.00	2½x3½			Zeiss Tessar	f4.5	f22	4½	3'	Anastigmat	✓
603	Bee Bee A	80.00	2½x3½			Meyer Trioplan	f3	f16	4½	3'	Anastigmat	
604	Bee Bee A	84.00	2½x3½			Xenar	f3.5	f22	4½	3'	Anastigmat	
605	Bee Bee A	96.00	2½x3½			Tessar	f3.5	f22	4½	3'	Anastigmat	
606	Bee Bee B	77.00	3½x4¾			Radionar	f4.5	f32	5½	7'	Anastigmat	✓
607	Bee Bee B	79.00	3½x4¾			Xenar	f4.5	f32	5½	7'	Anastigmat	✓
608	Bee Bee B	92.00	3½x4¾			Tessar	f4.5	f32	5½	7'	Anastigmat	✓
609	Bee Bee B	102.00	3½x4¾			Xenar	f3.5	f22	6	7'	Anastigmat	✓
610	Ideal B	135.00	3½x4¾			Zeiss Tessar	f4.5	f32	5½		Anastigmat	
611	Ihagee Duplex	65.00	9x12cm			Ihagee	f4.5		5½		Anastigmat	
612	Ihagee Duplex	78.00	9x12cm			Zeiss Tessar	f4.5	f32	5½			
613	Kawee Special	27.50	2½x3¾	B2, 120		Schneider Radionar	f4.5	f32	4½	3½'	Anastigmat	
614	Kawee	50.00	2½x3¾	B2, 120		Schneider Radionar	f4.5	f32	4½	3'	Anastigmat	
615	Kawee	55.00	2½x3¾	B2, 120		Schneider Xenar	f4.5	f32	4½	3'	Anastigmat	
616	Kawee	55.00	9x12cm	E6, 118		Schneider Radionar	f4.5	f32	5½	3'	Anastigmat	
617	Kawee	60.00	2½x3¾	B2, 120		Zeiss Tessar	f4.5	f32	4½	3'	Anastigmat	
618	Linhof Precision, Stanard	195.00	2½x3¾			Schneider Xenar	f4.5	f32	4½	6'	Anastigmat	✓
619	Linhof Precision, Standard	205.00	2½x3¾			Tessar	f4.5	f32	4½	6'	Anastigmat	✓
620	Linhof Precision, Standard	285.00	3½x4¾			Tessar	f4.5	f32	6	6'	Anastigmat	✓
621	Linhof Precision, Standard	335.00	4x6			Xenar	f4.5	f32	7½	6'	Anastigmat	✓



# Cameras (continued)

Make	Speed Range Slowest and fastest shutter speeds (in inches)	Shutter				Type	View- finder					Range Finder	Features							Source	Line Number
		No. of Speeds	Bulb Time	Cable Release	Waist level brilliant		Eye level telescopic	Eye level optical folding	Folding wire frame	Ground glass	Tripod Socket		Built-in Exposure Meter	Self-timer	Parallax adjustment	Synchronizer terminal	Auto Film Transport	Slim. Film—Shutter			
Compur	1/300—1	8	✓	✓	✓	Between Lens				✓	✓			✓		✓	✓		Burleigh Brooks, Inc.	503	
Compur	1/500—1	9	✓		✓	Between Lens			✓		✓			✓		✓	✓		Burleigh Brooks, Inc.	504	
Compur Rapid	1/500—1	9	✓		✓	Between Lens			✓		✓			✓		✓	✓		Burleigh Brooks, Inc.	505	
Compur	1/500—1	9	✓	✓	✓	Between Lens				✓	✓			✓		✓			Burleigh Brooks, Inc.	506	
Wollensak	1/200—1/25	4	✓	✓	✓	Between Lens		✓			✓			✓					Irwin Corp.	507	
Wollensak	1/200—1/25	4	✓	✓	✓	Between Lens		✓			✓			✓					Irwin Corp.	508	
Compur	1/300—1	8	✓	✓	✓	Between Lens					✓			✓					Willoughby's	509	
Compur	1/300—1	8	✓	✓	✓	Between Lens					✓			✓			✓		Willoughby's	510	
Compur Rapid	1/500—1	9	✓	✓	✓	Between Lens					✓			✓					Willoughby's	511	

## CAMERAS

Compur	1/250—1	8	✓	✓	✓	Bet. Lens	✓			✓	✓		✓	✓					Burleigh Brooks, Inc.	601
Compur	1/250—1	8	✓	✓	✓	Bet. Lens	✓			✓	✓		✓	✓					Burleigh Brooks, Inc.	602
Compur	1/200—1	8	✓	✓	✓	Bet. Lens	✓			✓	✓		✓	✓					Burleigh Brooks, Inc.	603
Compur	1/200—1	8	✓	✓	✓	Bet. Lens	✓			✓	✓		✓	✓					Burleigh Brooks, Inc.	604
Compur	1/250—1	8	✓	✓	✓	Bet. Lens	✓			✓	✓		✓	✓					Burleigh Brooks, Inc.	605
Compur	1/200—1	8	✓	✓	✓	Bet. Lens	✓			✓	✓		✓	✓					Burleigh Brooks, Inc.	606
Compur	1/200—1	8	✓	✓	✓	Bet. Lens	✓			✓	✓		✓	✓					Burleigh Brooks, Inc.	607
Compur	1/200—1	8	✓	✓	✓	Bet. Lens	✓			✓	✓		✓	✓					Burleigh Brooks, Inc.	608
Compur	1/200—1	8	✓	✓	✓	Bet. Lens	✓			✓	✓		✓	✓					Burleigh Brooks, Inc.	609
Compur	1/200—1	8	✓	✓	✓	Bet. Lens	✓			✓	✓		✓	✓					Carl Zeiss, Inc.	610
Compur	1/200—		✓	✓	✓		✓			✓	✓		✓	✓					Medo Photo Supply Co.	611
Compur	1/200—1	8	✓	✓	✓		✓			✓	✓		✓	✓					Medo Photo Supply Co.	612
Vario	1/100—1/25	3	✓	✓	✓	Bet. Lens	✓			✓	✓		✓	✓					Burleigh Brooks, Inc.	613
Compur	1/250—1	8	✓	✓	✓	Bet. Lens	✓			✓	✓		✓	✓					Burleigh Brooks, Inc.	614
Compur	1/250—1	8	✓	✓	✓	Bet. Lens	✓			✓	✓		✓	✓					Burleigh Brooks, Inc.	615
Compur	1/200—1	8	✓	✓	✓	Bet. Lens	✓			✓	✓		✓	✓					Burleigh Brooks, Inc.	616
Compur	1/250—1	8	✓	✓	✓	Bet. Lens	✓			✓	✓		✓	✓					Burleigh Brooks, Inc.	617
Compur	1/250—1	8	✓	✓	✓	Bet. Lens				✓	✓	Separate	✓	✓					Burleigh Brooks, Inc.	618
Compur	1/250—1	8	✓	✓	✓	Bet. Lens				✓	✓	Separate	✓	✓					Burleigh Brooks, Inc.	619
Compur	1/200—1	8	✓	✓	✓	Bet. Lens				✓	✓	Separate	✓	✓					Burleigh Brooks, Inc.	620
Compur	1/200—1	8	✓	✓	✓	Bet. Lens				✓	✓	Separate	✓	✓					Burleigh Brooks, Inc.	621

## View

Line Number	Name of Camera	Price	FILM			LENS						Interchangeable
			Negative Size (in inches)	Film Size	Special Spool	Make and Formula	Aperture	Aperture, smallest	Focal Length, inches	Focusee as close as	Type	
622	Linhof Precision, Standard	400.00	5x7			Xenar	f4.5	f32	8 1/4	6'	Anastigmat	✓
623	Linhof Precision, Technika	260.00	2 1/4 x 3 1/4			Schneider Xenar	f4.5	f32	4 1/4	6'	Anastigmat	✓
624	Linhof Precision, Technika	270.00	2 1/4 x 3 1/4			Tessar	f4.5	f32	4 1/4	6'	Anastigmat	✓
625	Linhof Precision, Technika	350.00	3 1/2 x 4 1/4			Xenar	f3.5	f32	6	6'	Anastigmat	✓
626	Linhof Precision, Technika	400.00	4x6			Xenar	f4.5	f32	7 1/4	6'	Anastigmat	✓
627	Linhof Precision, Technika	465.00	5x7			Xenar	f4.5	f32	8 1/4	6'	Anastigmat	✓
628	Lotte II	49.50	2 1/4 x 3 1/4			Meyer	f4.5	f22	4		Anastigmat	
629	Lotte II	68.20	2 1/4 x 3 1/4			Schneider	f3.5	f22	4		Anastigmat	
630	Maximar A	68.00	2 1/4 x 3 1/4			Zeiss Tessar	f4.5	f32	4 1/4		Anastigmat	
631	Maximar B	78.00	3 1/2 x 4 1/4			Zeiss	f4.5	f32	5 1/4		Anastigmat	
632	Nizza	52.50	9x12cm			Tessar	f4.5	f32	5 1/4		Anastigmat	
633	Parvola C	55.00	1 1/4 x 2 1/4	A8, 127		Ihagee	f3.5	f22	3		Anastigmat	
634	Parvola C	65.00	1 1/4 x 2 1/4	A8, 127		Zeiss Tessar	f3.5	f22	3		Anastigmat	
635	Parvola C	90.00	1 1/4 x 2 1/4	A8, 127		Zeiss Tessar	f2.8	f22	3		Anastigmat	
636	Makina IIS	275.00	1x1 1/2	35mm.		Plaubel Anticomar	f2.9	f32	4	4'	Anastigmat	✓
637	Recomar 18	54.00	2 1/4 x 3 1/4			Kodak	f4.5				Anastigmat	
638	Recomar 33	63.00	3 1/4 x 4 1/4			Kodak	f4.5				Anastigmat	
639	Speed Graphic	111.00	2 1/4 x 3 1/4			Kodak	f4.5	f32	4 1/4	9"	Anastigmat	✓
640	Speed Graphic	125.00	3 1/4 x 4 1/4	51		Kodak	f4.5	f32	5 1/4	11"	Anastigmat	✓
641	Speed Graphic	125.00	4x5	53		Kodak	f4.5	f32	5 1/4	11"	Anastigmat	✓
642	Speed Graphic	173.50	5x7	54		Kodak	f4.5	f32	7 1/2	15"	Anastigmat	✓
643	Venus	52.50	2 1/4 x 3 1/4			Tessar	f4.5		4 1/4	4'	Anastigmat	
644	Skyview D	245.00	3 1/4 x 4 1/4	E6, 118		Tessar	f4.5	f32	6	5'	Anastigmat	
645	Skyview K	95.00	2 1/4 x 3 1/4			Wollensak Aerial	f4.5	f32	5	6'	Anastigmat	

## STEREO

701	Altiscop	54.00	2 1/4 x 5	B2, 120		Victar	f4.5	f22	3	3'	Anastigmat	
702	Eho	15.00	2 1/4 x 5	B2, 120		Eho	f11	f22	3		Doublet	
703	Heidoscop Stereo	360.00	1 1/4 x 4 1/4	*		Zeiss Tessar	f4.5	f22	2 1/4	3'	Anastigmat	
704	Heidoscop Stereo	400.00	2 1/4 x 5	*		Zeiss Tessar	f4.5	f25	3	3'	Anastigmat	
705	Rolleidoscop	350.00	2 1/4 x 5	B2, 120		Zeiss Tessar	f4.5	f25	3	3'	Anastigmat	

\*Uses cut film, film pack, and plates only.

# Cameras (continued)

Shutter					View-finder				Range Finder	Features							Source	Line Number		
Make	Speed Range Slowest and fastest shutter speeds (in inches)	No. of Speeds	Bulb Time	Cable Release	Type	Waist level brilliant	Eye level telescopic	Eye level optical folding		Folding wire frame	Ground glass	Tripod Socket	Built-in Exposure Meter	Self-timer	Parallax adjustment	Synchronizer terminal			Auto Film Transport	Sim. Film-Shutter
Compound	1/100—1	7	✓	✓	Bet. Lens				✓	✓	Separate	✓							Burleigh Brooks, Inc.	622
Compur	1/250—1	8	✓	✓	Bet. Lens				✓	✓	Separate	✓	✓						Burleigh Brooks, Inc.	623
Compur	1/250—1	8	✓	✓	Bet. Lens				✓	✓	Separate	✓	✓						Burleigh Brooks, Inc.	624
Compur	1/200—1	8	✓	✓	Bet. Lens				✓	✓	Separate	✓	✓						Burleigh Brooks, Inc.	625
Compur	1/200—1	8	✓	✓	Bet. Lens				✓	✓	Separate	✓	✓						Burleigh Brooks, Inc.	626
Compound	1/100—1	7	✓	✓	Bet. Lens				✓	✓	Separate	✓							Burleigh Brooks, Inc.	627
Compur	1/250—1		✓	✓	Bet. Lens				✓	✓		✓	✓						Mimosa American Corp.	628
Compur	1/250—1		✓	✓	Bet. Lens	✓			✓	✓		✓	✓						Mimosa American Corp.	629
Compur Rapid	1/400—1	9	✓	✓	Bet. Lens	✓			✓	✓		✓	✓						Carl Zeiss, Inc.	630
Compur	1/200—1	9	✓	✓	Bet. Lens	✓			✓	✓		✓	✓						Carl Zeiss, Inc.	631
Compur	1/200	8	✓	✓	Bet. Lens	✓			✓	✓		✓	✓						Photo Marketing Corp.	632
Compur	1/300—1		✓	✓	Bet. Lens			✓	✓	✓		✓	✓						Henry Herbert	633
Compur	1/300—1		✓	✓	Bet. Lens			✓	✓	✓		✓	✓						Henry Herbert	634
Compur	1/400—1		✓	✓	Bet. Lens			✓	✓	✓		✓	✓						Henry Herbert	635
Compur	1/200—1	8	✓	✓	Behind Lens	✓		✓	✓	✓	Coupled Coincidence	✓		✓		✓			Photo Utilities, Inc.	636
Compur	1/200—1		✓	✓					✓	✓									Eastman Kodak Co.	637
Compur	1/200—1		✓	✓					✓	✓									Eastman Kodak Co.	638
Graflex	1/1000—1/10	24		✓	Focal plane	✓		✓	✓	✓	Coupled Coincidence	✓	✓	✓	✓				Folmer Graflex Corp.	639
Graflex	1/1000—1/10	24		✓	Focal plane					✓	Coupled Coincidence	✓	✓	✓					Folmer Graflex Corp.	640
Graflex	1/1000—1/10	24		✓	Focal plane			✓	✓	✓		✓							Folmer Graflex Corp.	641
Graflex	1/1000—1/10	24		✓	Focal plane			✓	✓	✓		✓							Folmer Graflex Corp.	642
Compur	1/250—1	7	✓	✓	Bet. Lens	✓			✓	✓		✓							Photo Marketing Corp.	643
Compur	1/200—1	8	✓	✓	Bet. Lens	✓					Separate			✓					Skyview Camera Co.	644
Skyview	1/100—1/2	6	✓	✓	Bet. Lens	✓					Separate								Skyview Camera Co.	645

## CAMERAS

	1/100—1/25	3	✓	✓		✓	✓					✓							Burleigh Brooks, Inc.	701
Eho	1/30	1	✓	✓	Fixed Focus	✓		✓				✓							Burleigh Brooks, Inc.	702
Compound	1/300—1	8	✓	✓	Mirror Reflex			✓	✓			✓		✓					Burleigh Brooks, Inc.	703
Compound	1/300—1	8	✓	✓	Mirror Reflex			✓	✓			✓		✓					Burleigh Brooks, Inc.	704
Compound	1/300—1	8	✓	✓	Mirror Reflex			✓	✓			✓		✓					Burleigh Brooks, Inc.	705

# New

## ENLARGING PAPER

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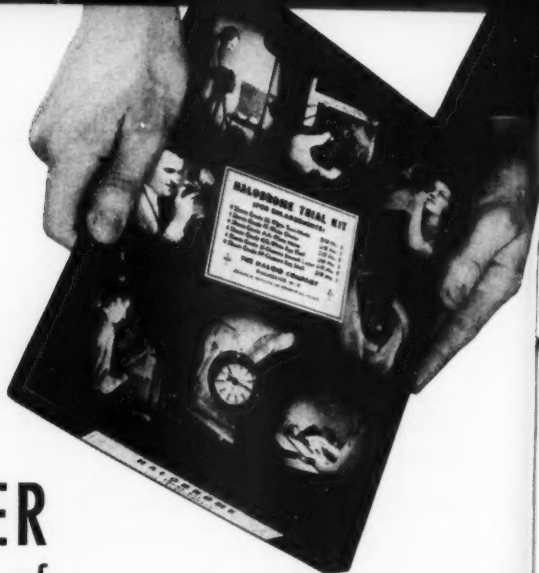
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Get acquainted with Halobrome by testing 6 favorite surfaces in your own darkroom. Compare the nine features listed below with your present enlarging paper. Write today for a trial kit—4 sheets each of 6 different surfaces, 8 x 10 size—\$1.00 postpaid.

#### You Get All 9 Features with HALOBROME

1. EXTRA RICH EMULSION—for best possible reproduction
2. UNIFORM CONTRAST—dependably maintained from lot to lot
3. UNIFORM EXPOSURE SPEED—uniformly maintained from lot to lot
4. UNIFORM TONE VALUE—in various contrasts
5. WIDE RANGE OF CONTRAST—4 standard PLUS a softer contrast
6. EXCEPTIONAL EXPOSURE LATITUDE—acceptable prints even 50% over- or under-exposed
7. EASY DEVELOPMENT—45 seconds to 4 minutes in standard developer
8. STANDS FORCED DEVELOPMENT WITHOUT FOG
9. CONTACT QUALITY—uncommon brilliancy and depth

Haloid Co., 281 Haloid St., Rochester, N. Y.

Enclosed please find \$1.00 for which please send me one Halobrome Trial Kit consisting of 4 sheets each of 6 favorite surfaces, 8 x 10 size. Cash, Check or Money Order.)

NAME.....

ADDRESS.....

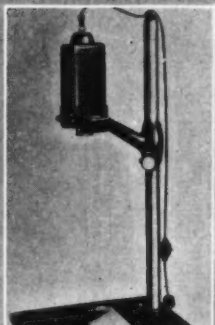
# HALOBROME

THE HALOID CO., ROCHESTER, N. Y.

OFFICES: Boston, 141 Milk St.; Chicago, 608 So. Dearborn St.; Detroit, 144 Lafayette Blvd.; Los Angeles, 714 So. Hill St.; New York, 330 West 42nd St.; Philadelphia, 1015 Chestnut St.; San Francisco, 222 Kearny St.; Washington, 15th and K Sts., N.W.

Texas and Oklahoma Distributor: JNO. J. JOHNSON, 1912 North St. Paul St., Dallas, Texas  
Canadian Distributors: RECTIGRAPH CO. of Canada, Ltd., Toronto

## ENLARGERS



**MAGNIPHOT,**  
without lens, \$45



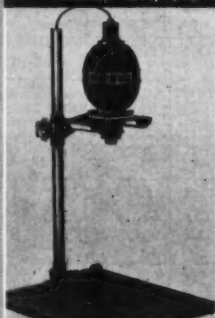
**MINETTE, Wol-**  
lensak lens, \$15.50



**MIN LARGER,**  
without lens, \$17.50



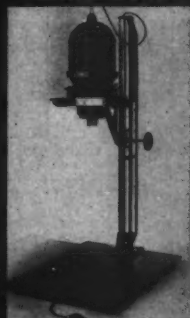
**GRANT MINIATURE,**  
f3.5 lens, \$42.50



**MICROGRAPHIC,**  
without lens, \$28.50



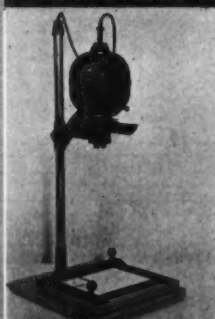
**FOCOMAT I,**  
without lens, \$84



**EXAKT IA,**  
f4.5 lens, \$75



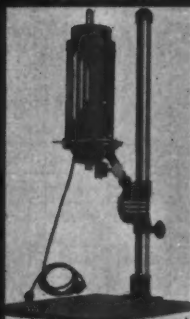
**KALER, f4.5**  
lens, \$49.50



**VALOY, with-**  
out lens, \$49.50



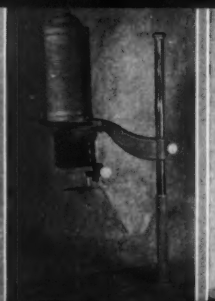
**BOYER 35, with-**  
out lens, \$49.50



**SOLAR JR.,**  
f4.5 lens, \$39.50



**"SPARKS" Hollywood,**  
without lens, \$37.50



**OPTEX JR., with-**  
out lens, \$14.50



**GRANT SR., with-**  
out lens, \$42.50



**LUMIMAX,**  
f4 lens, \$48



**BEACONLITE,**  
Belar lens, \$69.50



Number	Name of Enlarger	Price		Takes Negatives		Lens supplied with enlarger							Takes lenses of following cameras
		Without lens	With lens	From	To	Focal length (in inches)	Aperture	Aperture, smallest	Iris diaphragm	Minimum magnifica- tion in diameters (on baseboard)	Maximum magnifica- tion in diameters (on baseboard)	Audible diaph'm adjust.	
1	Argus EA2	16.50		35 mm.		2							
2	Argus EL2		20.00	35 mm. only		2	f5.6	f16		3X	10X		
3	Argus	49.50	57.50	35 mm. only		2	f3.5	f18	✓	2X	12½X		
4	Arnold A	\$65.00	\$75.00	35 mm.	2¼x3¾"	3½	f4.5	f32	✓	2X	20X		Any camera lens with same focal length
5	Bee Bee Model III		115.00	35 mm.	2¼x3¾"	4½	f4.5	f16	✓		6X		
6	Bee Bee Model IV		137.50	35 mm.	3¼x4¼"	5½	f4.5	f16	✓		5X		
7	Bee Bee Rajafox "O", Autofocus		100.00		1½x1½"	2	f4.5	f16	✓	2X	9½X		
8	Bee Bee Universal Rajah "O"		52.50		1¼x1¾"	2	f4.5	f16	✓	2X	9½X		
9	Boyer 23	69.50		35 mm.	2¼x3¾"								Speed Graphic
10	Royer 35	49.50		35 mm.	1½x1½"								Leica Contax Any 2 or 3" lens
11	Boyer 45	139.50		35 mm.	4x5"								
12	Craftsman		16.50	35 mm.	2¼x3¾"	3½	f6.3	f16		2X	10X		
13	Dasco		66.00	35 mm.	2½x2½"	3	f4.5	f32	✓	2X	9X		
14	Economy		5.50	35 mm.	2¼x2¼"								
15	Elwood Aerial and Mapping, 8x10"		650.00		8x10"	9½	f9	f45	✓	¼X	5X		Any 2" removable lens
16	Elwood AM, Miniature	32.50	47.00	1x1¾"	2¼x3¾"	3	f4.5	f32	✓	1½X	10X		Any 2" to 3½" removable lens
17	Elwood AM, Miniature	32.50	47.00	1x1¾"	2¼x3¾"	3	f4.5	f32	✓	1½X	10X		Any 2" to 3½" removable lens
18	Elwood BM	18.00	26.00	1x1¾"	1½x2¼"	3	f6.3	f32	✓	1½X	10X		Any 2" to 3½" removable lens
19	Elwood Auto-Focus, 5x7"		190.00		5x7"	6¼	f6.3	f45	✓	5X	6X		
20	Elwood Auto-Focus 8x10"		450.00		8x10"	10	f6.3	f45	✓	½X	5X		
21	Elwood Commercial, 8x10"	125.00	215.00		8x10"	10	f6.3	f45	✓	1X	5X		Any 6" to 12" removable lens
22	Elwood Special, 5x7"	69.00	97.50		5x7"	6½	f6.3	f32	✓	5X	6X		Any 5" to 7" removable lens
23	Elwood Studio, 5x7"	36.50	65.00		5x7"	6½	f6.3	f32	✓	5X	6X		Any 5" to 7" removable lens
24	Exakt IA		75.00	35 mm.	1½x1½"	2¼	f4.5	f11	✓	2½X	10X		
25	Exakt II		100.00	35 mm.	2¼x2¼"	3½	f4.5	f11	✓	2.7X	8X		



# ENLARGERS

Special mount available (at extra cost) to permit use of lenses from the following cameras	Illumination		Dimmer switch	Colored filter	Negative carrier					Masks furnished in following sizes	Masks available at additional cost in following sizes	Source	Number
	Number of condensers	Ground glass diffuser			Glass, book type	Glass, frame	Metal, glassless	Pressure plate	Metal, book type				
	2				✓				✓			International Research Corp.	1
	2				✓				✓			International Research Corp.	2
Leica, Contax	2				✓				✓			International Research Corp.	3
	2	✓		✓	✓				✓		35 mm. 1/4 V. P.	Sun Ray Photo Co.	4
Any suitable removable lens	✓	✓		✓	✓				✓		All standard sizes 35mm. to 9x12cm.	Burleigh Brooks, Inc.	5
Any suitable removable lens	✓	✓		✓	✓				✓		All standard sizes 35mm. to 2 1/4 x 3 1/4"	Burleigh Brooks, Inc.	6
Any suitable removable lens	2	✓		✓	✓					1x1 1/2, 1 1/4 x 1 1/2, 1 3/4 x 1 1/4"	1x1 1/2, 1 1/4 x 1 1/2, 1 3/4 x 1 1/4"	Burleigh Brooks, Inc.	7
Any suitable removable lens	1	✓		✓	✓					1x1 1/2, 1 3/4 x 1 1/4"	1x1 1/2, 1 3/4 x 1 1/4"	Burleigh Brooks, Inc.	8
Any screw or bayonet mounted lens can be fitted at the factory at a charge of \$3.75 postpaid and insured	2	✓		✓	✓	✓			✓	2 1/4 x 3 1/4"	35mm. to 2 1/4 x 3 1/4"	Boyer Photo Equipment Co.	9
	2	✓		✓	✓	✓			✓	35mm.	Bantam, 1 1/4 x 1 1/4"	Boyer Photo Equipment Co.	10
	2	✓		✓	✓	✓			✓	4x5"	35mm. to 2 1/4 x 3 1/4"	Boyer Photo Equipment Co.	11
		✓		✓	✓				✓	35mm., 1/4 V.P., V.P., 2 1/4 x 2 1/4", 2 3/4 x 3 1/4"		Sun Ray Photo Co., Inc.	12
		✓		✓	✓				✓	Adjustable		L. F. Deardorff & Sons	13
									✓			Hornstein Photo Sales	14
			✓	✓	✓				✓			Elwood Pattern Works, Inc.	15
Leica, Argus, Exakta, Perflex, Korelle, Nat. Graflex	2				✓	✓	✓		✓	1x1 1/4"		Elwood Pattern Works, Inc.	16
					✓	✓	✓		✓	1x1 1/4"		Elwood Pattern Works, Inc.	17
	1				✓	✓	✓	✓	✓	1 3/4 x 2 1/4"	1 3/4 x 1, 1 1/4 x 1 1/2", 1 3/4 x 2 1/4", 1 1/2 x 2 1/4"	Elwood Pattern Works, Inc.	18
			✓	✓	✓				✓			Elwood Pattern Works, Inc.	19
			✓	✓	✓				✓			Elwood Pattern Works, Inc.	20
					✓				✓			Elwood Pattern Works, Inc.	21
					✓				✓			Elwood Pattern Works, Inc.	22
					✓	✓		✓	✓			Elwood Pattern Works, Inc.	23
	2				✓	✓			✓	35mm. or 4x4 cm.	35mm. 4x4 cm.	Henry Herbert	24
	2				✓	✓			✓	2 1/4 x 2 1/4"	35mm. to 2 1/4 x 2 1/4"	Henry Herbert	25

Number	Name of Enlarger	Price		Takes Negatives		Lens supplied with enlarger							Takes lenses of following cameras
		Without lens	With lens	From	To	Focal length (in inches)	Aperture	Aperture, smallest	Iris diaphragm Minimum magnifica- tion in diameters (on baseboard)	Maximum magnifica- tion in diameters (on baseboard)	Audible diaph'm adjust.		
26	Exakt IIA		145.00	35 mm.	2¼x2¼"	2 lenses 2½, 3½	f4.5	f11	✓	4½X	16X		
27	Exakt III		110.00	35 mm.	2½x3½"	4¼	f4.5	f11	✓	1.7X	6.3X		
28	Exakt IV		200.00	35 mm.	3¼x4¾"	5¼	f4.5	f11	✓	1.4X	6X		
29	Exakt IVA		260.00	35 mm.	3¼x4¾"	2 lenses 5¼, 3¼	f4.5	f11	✓	3X	20X		
30	Federal No. 120		17.95	35 mm.	2¼x3¼"	3½	f6.3	f22		2½X	7X	✓	
31	Federal No. 230		34.50	35 mm.	2¼x3¼"	3½	f6.3	f32	✓	1½X	8X		
32	Federal No. 245		39.50	35 mm.	2¼x3¼"	3½	f4.5	f32	✓	1½X	8X		
33	Federal No. 505		9.95	35 mm.	2⅝x2⅝"	3½	f8	f22		2½X	5½X	✓	
34	Federal Variable Pro- jection Printer No. 636		29.50	16 mm. movie film	1¾x2½"	3¼	f6.3	f64		2½X		Uses special lens No. 101 only	
35	Federal Variable Pro- jection Printer No. 636		29.50	8 mm. movie film	½x¾"	1½	f13.5	f64		8½X		Uses special lens No. 102 only	
36	Federal Variable Pro- jection Printer No. 636	32.00		8mm. movie film	1½x2"	2¾	f6.3	f64		3½X		Uses special lens No. 103 only	
37	Federal Automatic Fixed Focus No. 835		12.50	Single frame 35 mm.	Double frame 35 mm.	1½	f13.5	f19		3¾X			
38	Filmaster	47.50	57.50	35 mm.	2¼x3¼"	3½	f4.5	f32	✓	2X	10X	✓ Any ¾" removable lens	
39	Focomat I	84.00	118.50	¾x1"	1½x1½"	2	f3.5		✓	2X	10X	✓ Leica 50mm.	
40	Focomat IIA		270.00	¾x1"	2½x3½"	3¾	f4		✓	1½X	4¾X	✓ Leica 50mm.	
41	Focomat IIA		304.50	¾x1"	2½x3½"	2 lenses 3¾, 2	2" lens f3.5		✓	2X	13X	✓ Leica 50mm.	
42	Graflex Enlarg-or- Printer	87.50		35 mm.	2¼x3¼"					4X	7X	Any 2" or 3" lens	
43	Grant Miniature		42.50	35 mm.		2	f3.5	f16	✓	2X	20X	✓ Any 2" removable lens	
44	Grant Senior	42.50	52.50	35 mm.	2¼x2¼"	3	f4.5	f32	✓	2X	10X	✓ Any 3" removable lens	
45	Ideal		5.94	1x1"	4x5"	5	f5				8X	Any lens focal length 1"—8"	
46	Ideal		7.94	1x1"	4x5"	3½	f6.3	f128			8X	Any lens focal length 1"—8"	
47	Kaler		49.50	35 mm. single frame	1¼x1¼"	2	f4.5	f16	✓	2X	16X	Any lens focal length 2"—4" less than 2" dia.	
48	Kine Exakta Lumimax	22.50			1x1½"	2½x2½"						Kine Exakta, Kine Night Exakta	
49	Kine Exakta Projection Lumimax	67.50	95.00	1x1½"	2x2"		f3.5	f22	✓	1½X	10X		

# Enlargers (continued)

Special mount available (at extra cost) to permit use of lenses from the following cameras	Illumination		Foot switch	Dimmer switch	Colored filter	Negative carrier					Masks furnished in following sizes	Masks available at additional cost in following sizes	Source	Number		
	Number of condensers	Ground glass diffuser				Opal glass diffuser	Glass, book type	Glass, frame	Metal, glassless	Pressure plate					Metal, book type	Takes film in strips
	2				✓	✓				✓	2¼x2¼"	35mm. to 2¼x2¼"	Henry Herbert	26		
	2				✓	✓				✓	2½x3½"	35mm. to 2½x3½"	Henry Herbert	27		
	2				✓	✓				✓	3¼x4¾"	35mm. to 3¼x4¾"	Henry Herbert	28		
	2				✓	✓				✓	3¼x4¾"	35mm. to 3¼x4¾"	Henry Herbert	29		
Lensboards for 2", 2½", 3", 3½" lenses	✓	✓			✓	✓		✓	✓	✓	35mm., ½ V. P., V. P., 2¼x2¼"		Federal Stamping and Engineering Corp.	30		
	1	✓	✓		✓	✓	✓	✓	✓	✓	Adjustable	35mm. to 2¼x3¼"	Federal Stamping and Engineering Corp.	31		
	1	✓	✓		✓	✓	✓	✓	✓	✓	Adjustable	35mm. to 2¼x3¼"	Federal Stamping and Engineering Corp.	32		
		✓	✓			✓	✓		✓	✓	✓	V. P.	35mm., ½ V. P., 2¼x2¼"	Federal Stamping and Engineering Corp.	33	
	✓	✓				✓				✓	16mm., ½x¾, ¾x1, 1x1½, Bantam 1¼x2¼"		Federal Stamping and Engineering Corp.	34		
	✓	✓				✓				✓	8 standard sizes		Federal Stamping and Engineering Corp.	35		
	✓	✓				✓				✓	8 standard sizes		Federal Stamping and Engineering Corp.	36		
	✓	✓					✓	✓		✓	For 2½x3½" prints		Federal Stamping and Engineering Corp.	37		
	2				✓	✓				✓	All standard sizes 35mm to 2¼x3¼"		Sun Ray Photo Co., Inc.	38		
	1								✓	✓	1x1½"		E. Leitz, Inc.	39		
	2								✓	✓	1x1½", 2½x3½"		E. Leitz, Inc.	40		
	2								✓	✓	1x1½", 2½x3½"	All standard sizes from ¾x1"—2½x3½"	E. Leitz, Inc.	41		
		✓		✓		✓					8 standard sizes		Folmer Graflex Corp.	42		
	3				✓	✓				✓	35mm., ½ V. P.		Sun Ray Photo Co., Inc.	43		
	2	✓			✓	✓				✓	2¼x2¼"	35mm., ½ V. P.	Sun Ray Photo Co., Inc.	44		
Any camera	✓	✓			✓	✓	✓			✓	6 standard sizes		Ideal Photo Enlarger Co.	45		
Any camera	✓	✓			✓	✓	✓			✓	6 standard sizes		Ideal Photo Enlarger Co.	46		
Any 35mm. camera	2				✓			✓		✓	35mm. double frame	Bantam, Robot, ½ V. P.	The Kaler Co.	47		
Leica (no extra charge) Contax	1	✓			✓			✓		✓	1x1½"	1¼x1¾"	Photo Marketing Corp.	48		
Leica, Contax	2				✓			✓		✓	1x1½"	1¼x1¾"	Photo Marketing Corp.	49		

Number	Name of Enlarger	Price		Takes Negatives		Lens supplied with enlarger							Takes lenses of following cameras
		Without lens	With lens	From	To	Focal length (in inches)	Aperture	Aperture, smallest	Iris diaphragm Minimum magnifica- tion in diameters (on baseboard)	Maximum magnifica- tion in diameters (on baseboard)	Audible diaph'm adjust.		
50	Kodak Auto-Focus Model B		40.00		4x5"	5½	f11						
51	Kodak Precision Enlarger	67.50	82.50		2¼x3¼"	2	f4.5	f22	✓		16X		Any 2" to 4" removable lens
52	Kodak Precision Enlarger	67.50	85.00		2¼x3¼"	3	f4.5	f22	✓		10X		Any 2" to 4" removable lens
53	Kodak Precision Enlarger	67.50	87.50		2¼x3¼"	4	f4.5	f22	✓		7X		Any 2" to 4" removable lens
54	Kodak Precision Enlarger (Ektar lens)	67.50	92.50		2¼x3¼"	2	f4.5	f22	✓		16X		Any 2" to 4" removable lens
55	Kodak Precision Enlarger (Ektar lens)	67.50	97.50		2¼x3¼"	3	f4.5	f22	✓		10X		Any 2" to 4" removable lens
56	Kodak Precision Enlarger (Ektar lens)	67.50	102.50		2¼x3¼"	4	f4.5	f22	✓		7X		Any 2" to 4" removable lens
57	Lumimax		48.00	35 mm.	2½x2½"	3	f4	f22	✓	1½X	7X		
58	Lumimax, V.P.	22.50		1x1½"	2½x2½"					1½X	5½X		All V.P. Exaktas
59	Lumimax, V.P. Projection	67.50	95.00	1x1½"	2½x2½"	3	f3.5	f22	✓	1½X	5X		All V.P. Exaktas
60	Magniphot	45.00		1x1½"	1¼x1½"						20X		Contax and Contaflex 2" lenses
61	Makigraph	175.00			2½x3½"								Entire Makina camera can be used or any Makina lenses
62	Masterbilt	19.50		16 mm.	3½x5½"								With camera adapter
63	Masterbilt	29.50		16 mm.	3½x5½"								With adapter for a short focal length lens
64	Masterbilt		42.50	16 mm.	3½x5½"	2 or 3½	f6.3		✓				With camera and miniature adapter
65	Masterbilt		44.50	16 mm.	3½x5½"	2 or 3½	f4.5		✓				With camera and miniature adapter
66	Masterbilt		45.50	16 mm.	3½x5½"	2	f3.5		✓				With camera and miniature adapter
67	Masterbilt		47.50	16 mm.	3½x5½"	3	f3.5		✓				With camera and miniature adapter
68	Masterbilt		49.50	16 mm.	3½x5½"	3½	f3.5		✓				With camera and miniature adapter
69	Mastercraft	32.50	37.50	1x1"	2¼x3¼"	3½	f6.3	f16	✓	2X	10X		Any 3½" removable lens
70	Mastercraft	32.50	42.50	1x1"	2¼x3¼"	3½	f4.5	f32	✓	2X	10X		Any 3½" removable lens

# Enlargers (continued)

Special mount available (at extra cost) to permit use of lenses from the following cameras	Illumination		Foot switch	Dimmer switch	Colored filter	Negative carrier					Masks furnished in following sizes	Masks available at additional cost in following sizes	Source	Number
	Number of condensers	Ground glass diffuser	Opal glass diffuser			Glass, book type	Glass, frame	Metal, glassless	Pressure plate	Metal, book type	Takes film in strips			
							✓				7 standard sizes		Eastman Kodak Co.	50
	3						✓	✓		✓	1, any standard size to 2¼x3¾"	8 standard sizes	Eastman Kodak Co.	51
	3						✓	✓		✓	1, any standard size to 2¼x3¾"	8 standard sizes	Eastman Kodak Co.	52
	3						✓	✓		✓	1, any standard size to 2¼x3¾"	8 standard sizes	Eastman Kodak Co.	53
	3						✓	✓		✓	1, any standard size to 2¼x3¾"	8 standard sizes	Eastman Kodak Co.	54
	3						✓	✓		✓	1, any standard size to 2¼x3¾"	8 standard sizes	Eastman Kodak Co.	55
	3						✓	✓		✓	1, any standard size to 2¼x3¾"	8 standard sizes	Eastman Kodak Co.	56
	1	✓				✓	✓			✓	1, any standard size to 2¼x2½"	Standard sizes, 35mm. to 2½x2½"	Henry Herbert	57
	1	✓						✓		✓	1½x2¾"	1x1½, 1½x1¾"	Photo Marketing Corp.	58
	2				✓			✓		✓	1½x2¾"	1x1½, 1½x1¾, 1½x2¾, 2¾x2¾"	Photo Marketing Corp.	59
	1							✓		✓			Carl Zeiss, Inc.	60
	2	✓			✓	✓				✓	2¼x3¾"		Photo Utilities, Inc.	61
		✓					✓			✓		Standard sizes to 3½x5½"	Harold Francke	62
		✓					✓			✓		Standard sizes to 3½x5½"	Harold Francke	63
		✓					✓			✓		Standard sizes to 3½x5½"	Harold Francke	64
		✓					✓			✓		Standard sizes to 3½x5½"	Harold Francke	65
		✓					✓			✓		Standard sizes to 3½x5½"	Harold Francke	66
		✓					✓			✓		Standard sizes to 3½x5½"	Harold Francke	67
	2	✓			✓	✓				✓	Adjustable		Sun Ray Photo Co., Inc.	68
		✓					✓			✓		Standard sizes to 3½x5½"	Harold Francke	69
	2	✓			✓	✓				✓	Adjustable		Sun Ray Photo Co., Inc.	70

# Modern

Number	Name of Enlarger	Price		Takes Negatives		Lens supplied with enlarger							Takes lenses of following cameras
		Without lens	With lens	From	To	Focal length (in inches)	Aperture	Aperture, smallest	Iris diaphragm	Minimum magnifica- tion in diameters (on baseboard)	Maximum magnifica- tion in diameters (on baseboard)	Audible diaph'm adjust	
71	Micrographic, Univex	28.50	36.00	3/4x1"	1 1/4x1 1/2"	2	f4.5	f16	✓	3X	12X		Univex Mercury
72	Micrographic, Univex	28.50	40.50	3/4x1"		1 1/4	f3.5	f22	✓	3X	16X		Univex Mercury
73	Minaco Projection Enlarger	62.50	77.00	8 mm.	2 1/4x2 3/4"	2	f4.5						Leica
74	Minaco Projection Enlarger	62.50	82.50	8 mm.	2 3/4x2 3/4"	3	f4.5						Leica
75	Minaco Projection Enlarger	62.50	92.50	8 mm.	2 1/4x2 3/4"	3	f3.5						
76	Minette		15.50	1/4x1/4"	1x1 1/2"	2	f5	f16	✓	2X	11X		
77	Miniature		32.50	35 mm.		2	f3.5	f16	✓	2X	20X		Any 2" removable lens
78	Min-Larger	17.50	29.50	3/4x1/4"	1 1/4x1 1/4"	2	f3.5	f16	✓	1 1/2X	12X- 24X		Any suitable removable lens
79	Min-Larger	21.00	32.50	1/4x1/4"	2 3/4x2 3/2"	3	f4.5	f22	✓	1 1/2X	7 1/2X- 15X		Any suitable removable lens
80	Min-Larger	25.00	37.50	1/4x1/4"	2 1/4x3 3/4"	3 1/2	f4.5	f22	✓	1 1/2X	13X		Any suitable removable lens
81	Min-Larger	35.00	52.50	1/4x1/4"	3 1/4x4 1/4"	5	f4.5	f32	✓	1 1/2X	8X		Any suitable removable lens
82	Min-Larger	65.00	85.00	1/4x1/4"	4x5"	5	f4.5	f32	✓	1 1/2X	12X		Any suitable removable lens
83	Mirax	20.00		2 1/4 x2 1/4"	3 1/2x4 3/4"								Used with 2 1/4x3 1/4" to 3 1/2x4 3/4" roll film or plate folding camera
84	Multi-Lens	7.00	9.85*	35 mm.	4x5"								
85	Omega A (Simmon Anastigmat Lens)	48.00	63.00	35 mm. only		2	f4.5	f22	✓	3X	16X		
86	Omega A (Dallemeier Anastigmat Lens)	48.00	73.00	35 mm. only		2	f4.5	f22	✓	3X	16X		
87	Omega A (B & L Tessar Lens)	48.00	93.00	35 mm. only		1 1/4	f4.5	f22	✓	3X	16X		
88	Omega B (Simmon Anastigmat Lens)	65.00	85.00	8 mm.	2 1/4x2 3/4"	2 or 3	f4.5	f22	✓	3X	9X		Any 2" or 3" removable lens
89	Omega B (Simmon Anastigmat Lens)	65.00	90.00	8 mm.	2 1/4x2 1/4"	3	f3.5		✓	3X	9X		Any 3" removable lens
90	Omega B (Dallemeier Anastigmat Lens)	65.00	95.00	8 mm.	2 1/4x2 1/4"	2 or 3	f4.5	f22	✓	3X	9X		Any 2" or 3" removable lens
91	Omega C	97.50	128.50	35 mm.	3 3/4x3 3/4"	2	f4.5	f22	✓	2X	22X		Any 2" to 4 3/4" removable lens

\* Enlarger is equipped with four lenses, 3", 5", 8" achromatic; 3 1/2" anastigmat.



# Enlargers (continued)

Special mount available (at extra cost) to permit use of lenses from the following cameras	Illumination		Foot switch	Dimmer switch	Colored filter	Negative carrier						Masks furnished in following sizes	Masks available at additional cost in following sizes	Source	Number
	Number of condensers	Ground glass diffuser				Glass, book type	Glass, frame	Metal, glassless	Pressure plate	Metal, book type	Takes film in strips				
	2				✓		✓	✓	✓	✓	✓	Single and double frame 35mm.	½ V. P., Univex No. 00	Universal Camera Corp.	71
	2				✓		✓	✓	✓	✓	✓	Single and double frame 35mm.	½ V. P., Univex No. 00	Universal Camera Corp.	72
	2						✓	✓	✓	✓	✓	1, any standard size to 2¼x2¼"	8 standard sizes	Miniature Camera Accessories Co.	73
	2						✓	✓	✓	✓	✓	1, any standard size to 2¼x2¼"	8 standard sizes	Miniature Camera Accessories Co.	74
	2						✓	✓	✓	✓	✓	1, any standard size to 2¼x2¼"	8 standard sizes	Miniature Camera Accessories Co.	75
	2	✓	✓		✓		✓				✓	1x1½"		Leonard Westphalen	76
	2	✓			✓		✓				✓	35mm., ½ V. P.		Sun Ray Photo Co., Inc.	77
Argus C2, Foth Derby, Perflex Univex, Mercury, Leica, Contax, Kine Exakta	2	✓	✓	✓	✓		✓				✓	1, 35mm., ½ V. P., 1½x1½"	35mm., ½ V. P., 1½x1½"	Leonard Westphalen	78
Exakta, Korelle Reflex, National Graflex, Pilot Super	2	✓	✓	✓	✓		✓				✓	1, any standard size to 2¼x3¼"	Any standard size to 2¼x3¼"	Leonard Westphalen	79
2¼x3¼ Speed Graphic	2	✓	✓	✓	✓		✓				✓	1, any standard size to 2¼x3¼"	Any standard size to 2¼x3¼"	Leonard Westphalen	80
3¼x4¼ Speed Graphic	2	✓	✓	✓	✓		✓	✓			✓	3¼x4¼"	Any standard size to 3¼x4¼"	Leonard Westphalen	81
Any 5" or 6" removable lens	2	✓	✓	✓	✓		✓	✓			✓	4x5"	Any standard size to 4x5"	Leonard Westphalen	82
							✓							Carl Zeiss, Inc.	83
		✓	✓			✓	✓	✓	✓			6 standard sizes		Graphomat Corporation	84
Leica, Contax, Kine Exakta	2	✓			✓		✓	✓	✓	✓		35mm.		Simmon Bros.	85
Leica, Contax, Kine Exakta	2	✓			✓		✓	✓	✓	✓		35mm.		Simmon Bros.	86
Leica, Contax, Kine Exakta	2	✓			✓		✓	✓	✓	✓		35mm.		Simmon Bros.	87
	2	✓			✓		✓	✓				1, any standard size to 2¼x2¼"	Standard sizes to 2¼x2¼"	Simmon Bros.	88
	2	✓			✓		✓	✓				1, any standard size to 2¼x2¼"	Standard sizes to 2¼x2¼"	Simmon Bros.	89
	2	✓			✓		✓	✓				1, any standard size to 2¼x2¼"	Standard sizes to 2¼x2¼"	Simmon Bros.	90
	2				✓		✓	✓	✓			1, any standard size to 3¼x3¼"	Standard sizes to 3¼x3¼"	Simmon Bros.	91

Number	Name of Enlarger	Price		Takes Negatives		Lens supplied with enlarger							Takes lenses of following cameras
		Without lens	With lens	From	To	Focal length (in inches)	Aperture	Aperture, smallest	Iris diaphragm	Minimum magnifica- tion in diameters (on baseboard)	Maximum magnifica- tion in diameters (on baseboard)	Audible diaph'm adjust.	
92	Omega D††	175.00		8mm.	4x5"				✓	3X	22X		Any 2" to 6½" removable lens
93	Optex 57	27.50		35 mm.	5x7"				✓				Any suitable removable lens
94	Optex 57 A	27.50	59.50	35 mm.	5x7"	5¼	f4.5	f22	✓				Any 5¼" removable lens
95	Optex 58	36.50		35 mm.	5x7"								Any suitable removable lens
96	Optex 58 A	36.50	69.50	35 mm.	5x7"	5¼	f4.5	f22	✓				Any suitable removable lens
97	Optex 58 B	36.50	96.50	35 mm.	5x7"	5¼	f4.5	f22	✓				Any suitable removable lens
98	Optex 60	35.00	52.50	35 mm.	2½x3½"	3	f4.5	f22	✓		10X		Any suitable removable lens
99	Optex De Luxe	19.00	24.50	35 mm.	2¼x3¼"	3¼	f6.3	f16	✓	2X	8X		Any suitable removable lens
100	Optex Three Star, Jr.	14.50		35 mm.	2¼x2¼"								Any suitable removable lens
101	Optex Three Star, Sr.		19.50	35 mm.	2¼x2¼"	3¼	f6.3	f16		2X	8X	✓	Any suitable removable lens
102	Photrix "22"	54.00	72.50	1x1"	2¼x3¼"	3	f4.5	f32	✓	2X	10X		Any suitable removable lens
103	Photrix "22"	54.00	74.00	1x1"	2¼x3¼"	3¼	f4.5	f32	✓	2X	8X		Any suitable removable lens
104	Photrix "22"	54.00	79.00	1x1"	2¼x3¼"	3	f3.5	f32	✓	2X	10X		Any suitable removable lens
105	Photrix "22"	54.00	84.00	1x1"	2¼x3¼"	3¼	f3.5	f32	✓	2X	8X		Any suitable removable lens
106	Photrix "22"	54.00	69.00	1x1"	2¼x3¼"	2	f4.5	f32	✓	3X	16X		Any suitable removable lens
107	Photrix "22"	54.00	74.00	1x1"	2¼x3¼"	2	f3.5	f32	✓	3X	16X		Any suitable removable lens
108	Praxidos	32.50		35 mm.						1½X	9X		Leica, Contax
109	Praxidos		32.50	35 mm.	1½x1½"	2¼	f4.5	f22	✓	1½X	8X		
110	Praxidos		42.50	35 mm.	2¼x2¼"	3				1½X	7X		
111	Praxidos		75.00	35 mm.	2¼x3¼"	4¼	f4.5			1½X	7X		
112	Praxidos Autofocus	47.50		35 mm.						1½X	9X		2" Leica, Contax or Schneider lenses
113	Praxidos Autofocus		72.50	35 mm.	2¼x2¼"	3	f3.5			1½X	7X		
114	Saltzman	265.00		35 mm.	4x5"								Any camera
115	Saltzman	350.00		35 mm.	5x7"								Any camera
116	Saltzman	550.00		35 mm.	8x10"								Any camera
117	Skyview L-L1	49.75	65.00	35 mm.	2¼x3¼"	3¼	f4.5	f32	✓	2X	6X		Any suitable removable lens

†† 14 lenses available in focal lengths from 48mm. to 6½".

# Enlargers (continued)

Special mount available (at extra cost) to permit use of lenses from the following cameras	Illumination		Negative carrier									Masks furnished in following sizes	Masks available at additional cost in following sizes	Source	Number
	Number of condensers	Ground glass diffuser	Opal glass diffuser	Foot switch	Dimmer switch	Colored filter	Negative carrier								
							Glass, book type	Glass, frame	Metal, glassless	Pressure plate	Metal, book type				
	2				✓		✓	✓	✓			1, any standard size to 4x5"	All standard sizes to 4x5"	Simmon Bros.	92
		✓			✓		✓				✓	Any standard size to 5x7"		Syracuse Mfg. Co.	93
		✓			✓		✓				✓	Any standard size to 5x7"		Syracuse Mfg. Co.	94
		✓			✓		✓				✓	Any standard size to 5x7"		Syracuse Mfg. Co.	95
		✓			✓		✓				✓	Any standard size to 5x7"		Syracuse Mfg. Co.	96
		✓			✓		✓				✓	Any standard size to 5x7"		Syracuse Mfg. Co.	97
	2	✓			✓	✓	✓	✓	✓		✓	Any standard size to 2½x3½"		Syracuse Mfg. Co.	98
Contax		✓			✓	✓	✓	✓	✓	✓	✓	Any standard size to 2¼x3¼"		Syracuse Mfg. Co.	99
Contax		✓			✓	✓	✓	✓	✓	✓	✓	Any standard size to 2¼x2¼"		Syracuse Mfg. Co.	100
Contax		✓			✓	✓	✓	✓	✓	✓	✓	Any standard size to 2¼x2¼"		Syracuse Mfg. Co.	101
Leica, Contax	2	✓			✓		✓				✓	1, any standard size to 2¼x2¼"	Any size to 2¼x2¼"	Intercontinental Marketing Corp.	102
Leica, Contax	2	✓			✓		✓				✓	1, any standard size to 2¼x2¼"	Any size to 2¼x2¼"	Intercontinental Marketing Corp.	103
Leica, Contax	2	✓			✓		✓				✓	1, any standard size to 2¼x2¼"	Any size to 2¼x2¼"	Intercontinental Marketing Corp.	104
Leica, Contax	2	✓			✓		✓				✓	1, any standard size to 2¼x2¼"	Any size to 2¼x2¼"	Intercontinental Marketing Corp.	105
Leica, Contax	2	✓			✓		✓				✓	1, any standard size to 2¼x2¼"	Any size to 2¼x2¼"	Intercontinental Marketing Corp.	106
Leica, Contax	2	✓			✓		✓				✓	1, any standard size to 2¼x2¼"	Any size to 2¼x2¼"	Intercontinental Marketing Corp.	107
	1	✓			✓	✓					✓	35mm.		Burleigh Brooks, Inc.	108
	1	✓			✓	✓					✓	1½x1½"		Burleigh Brooks, Inc.	109
	1	✓			✓	✓					✓	2¼x2¼"	Any size to 2¼x2¼"	Burleigh Brooks, Inc.	110
	1	✓			✓	✓					✓	2¼x3¼"	Any size to 2¼x3¼"	Burleigh Brooks, Inc.	111
	1	✓			✓	✓					✓	35mm.		Burleigh Brooks, Inc.	112
	1	✓			✓	✓					✓	2¼x2¼"	Any size to 2¼x2¼"	Burleigh Brooks, Inc.	113
None needed	3	✓	✓		✓		✓	✓			✓	All sizes to 4x5"		J. G. Saltzman, Inc.	114
None needed	3	✓	✓		✓		✓	✓			✓	All sizes to 5x7"		J. G. Saltzman, Inc.	115
None needed	3	✓	✓	✓	✓		✓	✓			✓	All sizes to 8x10"		J. G. Saltzman, Inc.	116
Leica, Contax, Korelle Reflex	2				✓	✓					✓	2¼x3¼"	35mm. to 2¼x2¼"	Skyview Camera Co.	117

Number	Name of Enlarger	Price		Takes Negatives		Lens supplied with enlarger							Takes lenses of following cameras
		Without lens	With lens	From	To	Focal length (in inches)	Aperture	Aperture, smallest	Iris diaphragm	Minimum magnifica- tion in diameters (on baseboard)	Maximum magnifica- tion in diameters (on baseboard)	Audible diaph'm adjust.	
118	Skyview L2	49.75	65.00	35 mm.	1½x2½"	2	f3.5	f16		1X	13X		
119	Solar 1	39.50	49.50	1x1½"	2¼x3¼"	2	f4.5	f22	✓	2X	18X		
120	Solar 2	39.50	49.50	1x1½"	2¼x3¼"	3½	f4.5	f22	✓	2X	18X		
121	Solar 3	39.50	49.50	1x1½"	2¼x3¼"	3½	f4.5	f22	✓	2X	18X		Any lens with focal length 2" to 3½"
122	Solar Jr.		39.50	1x1½"	½-V.P.	2	f4.5	f22	✓	2X	18X		
123	Solar Sr.	64.50		1x1½"	4x5"								Any suitable removable lens
124	Solar	49.50		1x1½"	3¼x4¼"								
125	Solar	49.50		1x1½"	4x5"								
126	Solar	52.50		1x1½"	5x7"								
127	"Sparks" Hollywood	37.50	49.50	8 mm.	½-V.P.	2	f3.5	f22	✓	2X	20X		Leica, Argus, Perfex, Mercury
128	Speed-Mask		64.50		2¼x3¼"	2	f4.5	f16	✓		14X		Any suitable removable lens
129	Speed-Mask		67.50		2¼x3¼"	3½	f4.5	f16	✓		10X		Any suitable removable lens
130	Uniprint		167.50	1½x2½"	4x5"	5¼			✓	3X	5X		
131	Uniprint Jr.		69.50	1½x1½"	2¼x3¼"	4¼	f4.5	f16	✓	2X	7½X		
132	Valoy	49.50	84.00	¾x1"	1½x1½"	2	f3.5		✓	2X	11X	✓	Leica 2" lenses except Xenon f1.5
133	Vamax	73.50	108.00	¾x1"		2	f3.5		✓	2X	16X	✓	Leica 2" lenses except Xenon f1.5
134	Vasex I		175.50	¾x1"	2¼x3¼"	3¼	f4		✓		6X	✓	Leica 2" lenses except Xenon f1.5
135	Vasex I		210.00	¾x1"	2½x3½"	2 lenses 3¼ 2	f4 f3.5		✓		6X 13X	✓	Leica 2" lenses except Xenon f1.5
136	Vasex II		198.00	¾x1"	2½x3½"	3¼	f4		✓		9½X	✓	Leica 2" lenses except Xenon f1.5
137	Vasex II		232.50	¾x1"	2½x3½"	2 lenses 3¼ 2	f4 f3.5		✓		9½X 19X	✓	Leica 2" lenses except Xenon f1.5
138	Vertilarger A	29.00		35mm.	2¼x2¼"								Any suitable removable lens
139	Vertilarger B	35.00		35mm.	3¼x3¼"								Any suitable removable lens
140	Vertilarger C	45.00		35mm.	3¼x4¼"								Any suitable removable lens

# Enlargers (continued)

Special mount available (at extra cost) to permit use of lenses from the following cameras	Illumination		Ground glass diffuser	Opal glass diffuser	Foot switch	Dimmer switch	Colored filter	Negative carrier					Masks furnished in following sizes	Masks available at additional cost in following sizes	Source	Number
	Number of condensers	Number of lenses						Glass, book type	Glass, frame	Metal, glassless	Pressure plate	Metal, book type				
Leica, Contax Kine Exakta	2						✓	✓				✓		35mm. to 1½x2½"	Skyview Camera Co.	118
	2	✓					✓		✓	✓		✓	1, any standard size to 2¼x3¼"	All standard sizes to 2¼x3¼"	Burke & James, Inc.	119
Contax, Kine Exakta	2	✓					✓		✓	✓		✓	1, any standard size to 2¼x3¼"	All standard sizes to 2¼x3¼"	Burke & James, Inc.	120
Any lens	2	✓					✓		✓	✓		✓	1, any standard size to 2¼x3¼"	All standard sizes to 2¼x3¼"	Burke & James, Inc.	121
	2	✓	✓				✓		✓			✓	1, Robot, Bantam, 35mm., or ½-V.P.	All standard sizes to ½-V.P.	Burke & James, Inc.	122
None needed	2						✓		✓			✓	1, any standard size to 4x5"	All standard sizes to 4x5"	Burke & James, Inc.	123
Any removable camera lens		✓							✓				1, any standard size to 3¼x4¼"	All standard sizes to 3¼x4¼"	Burke & James, Inc.	124
Any removable camera lens		✓							✓				1, any standard size to 4x5"	All standard sizes to 4x5"	Burke & James, Inc.	125
Any removable camera lens		✓	✓						✓				1, any standard size to 5x7"	All standard sizes to 5x7"	Burke & James, Inc.	126
Contax, Kine Exakta, & other bayonet type lens mounts	2								✓			✓	1, 8mm, 16mm, or 35 mm.	18 and 16 mm.	Hollywood Photo Products Co.	127
Leica, Contax	2						✓	✓				✓	Adjustable		American Photo Products Co.	128
Leica, Contax	2						✓	✓				✓	Adjustable		American Photo Products Co.	129
Any suitable removable lens	2	✓					✓	✓				✓	Adjustable		Robert M. Lynn	130
	2	✓					✓	✓				✓			Robert M. Lynn	131
	1									✓		✓	1x1½"	Standard sizes to 1½x1½"	E. Leitz, Inc.	132
	1									✓		✓	1x1½"	Standard sizes to 1½x1½"	E. Leitz, Inc.	133
	2										✓	✓	1x1½, 2½x3½"	Standard sizes to 2½x3½"	E. Leitz, Inc.	134
	2										✓	✓	1x1½, 2½x3½"	Standard sizes to 2½x3½"	E. Leitz, Inc.	135
	2										✓	✓	1x1½, 2½x3½"	Standard sizes to 2½x3½"	E. Leitz, Inc.	136
	2										✓	✓	1x1½, 2½x3½"	Standard sizes to 2½x3½"	E. Leitz, Inc.	137
Any camera removable lens	2	✓					✓	✓	✓			✓	1, any standard size to 2¼x2¼"	Standard sizes to 2¼x2¼"	Caryllian Co.	138
	2	✓					✓	✓				✓	1, any standard size to 3¼x3¼"		Caryllian Co.	139
	2	✓					✓	✓	✓			✓	1, any standard size to 3¼x4¼"	Standard sizes to 3¼x4¼"	Caryllian Co.	140

## EXPOSURE METERS — PHOTOELECTRIC

Line Number	Name of Exposure Meter	Price		Use In			Readings				Emulsion Rating System used						Angle of acceptance	Source								
		With Case	Without Case	Daylight	Night	Flash	Floodlight	Color	Calibrated for Still Cameras	Calibrated for Cine Cameras	Aperture range, from	Aperture range, to	Shutter speed range (in seconds) from	Shutter speed range (in seconds) to	In	Direct (speed, aperture)			By conversion	Schneider	Din	H & D	Other	From	To	
1	Amato	9.00		✓	✓	✓	✓	✓	✓	✓	f/1	f/48	60	1/1000	Full stops	✓		✓	✓	✓			17°S 6/10D	32°S 21/10D	90°	George Murphy, Inc.
2	Cine Photocrop	14.75		✓	✓	✓	✓	✓	✓	✓	f/1.4	f/16	8 frames per sec.	64 frames per sec.	1/2 stops	✓		✓	✓				14°	29°		Photo Utilities, Inc.
3	De Jur-Ameco	12.50	11.50	✓	✓	✓	✓	✓	✓	✓	f/1	f/32	60	1/1000	1/2 stops	✓		✓	✓				3	200	50°	De-Jur Ameco Corp.
4	Electrophot No. 14	11.00	10.00	✓	✓	✓	✓	✓	✓	✓	f/1.4	f/32	2	1/1000	Stops & 1/2 stops	✓		✓	✓				3W 14°S	400W 35°S		J. Thomas Rhamstine
5	Eos	13.75		✓	✓	✓	✓	✓	✓	✓	f/1.5	f/25	120	1/2000	Stops	✓		✓	✓				6W 13°S	200W 32°S		American Bolex Co.
6	General Electric	21.00	19.50	✓	✓	✓	✓	✓	✓	✓	f/1	f/64	60	1/1000	Stops, 1/2 stops & 1/4 stops	✓						✓	2 (Gen. Elec.)	160 (Gen. Elec.)	30° Vert. 60° Horiz.	General Electric Co.
7	G. M. Jr.	6.95	5.95	✓	✓	✓	✓	✓	✓	✓	f/1.5	f/32	16	1/1000	1/2 stops	✓		✓	✓				1	250		G-M Laboratories
8	Horvex, Standard	21.50		✓	✓	✓	✓	✓	✓	✓	f/1.5	f/25		1/3000	1/2 stops	✓		✓	✓							American Bolex Co.
9	Horvex, for Leica	23.00		✓	✓	✓	✓	✓	✓	✓						✓		✓	✓							American Bolex Co.
10	Horvex, for Cine cameras only	23.00		✓	✓	✓	✓	✓	✓	✓	f/1.5	f/25	8 frames per sec.	64 frames per sec.	1/2 stops	✓		✓	✓				13°S 6/10D	32°S 25/10D		American Bolex Co.
11	Mini		12.50	✓	✓	✓	✓	✓	✓	✓	f/1	f/64	60	1/2000	1/2 stops	✓		✓	✓			✓	14°S 3FS	38°S 800FS		Photo Utilities, Inc.
12	Mini Photocrop	14.75		✓	✓	✓	✓	✓	✓	✓	f/1.4	f/32	60	1/2000	Full stops	✓		✓	✓				14°	29°		Photo Utilities, Inc.
13	Photrix S S	20.00	18.75	✓	✓	✓	✓	✓	✓	✓	f/1	f/36	60	1/2000	1/2 stops	✓		✓	✓				1.5W 11°S	800W 38°S		Intercontinental Marketing Corp.
14	Photrix Universal Photometer A		57.00	✓	✓	✓	✓														*					Intercontinental Marketing Corp.
15	Photrix Universal Photometer B		37.50	✓	✓	✓	✓														*					Intercontinental Marketing Corp.

\* Reads in foot candles from 0.5.



16	Super Electrophot		14.50	✓✓	✓✓✓✓✓✓✓✓✓✓	f/1	f32	60	1/1000	1/4 stops	✓✓✓✓✓✓✓✓✓✓	1.5W 11°S	250W 33°S	J. Thomas Rhamatine	
17	Temphot	19.75		✓✓	✓✓✓✓✓✓✓✓✓✓	f1.5	f25	240	1/3000	1/4 stops	✓✓✓✓✓✓✓✓✓✓	13°S 6/10D	32°S 25/10D	American Bolex Co.	
18	Temphot, for Leica	21.50		✓✓				240	1/3000		✓✓✓✓✓✓✓✓✓✓			American Bolex Co.	
19	Temphot, for cine camera	21.50		✓✓				240	1/3000		✓✓✓✓✓✓✓✓✓✓			American Bolex Co.	
20	Weston Cine 819	21.45	19.95	✓✓✓✓	✓✓✓✓✓✓✓✓✓✓	f/1	f22	6 frames per sec.	64 frames per sec.	1/4 stops	✓✓✓✓✓✓✓✓✓✓	1.5	250	30°	Weston Electric Instrument Co.
21	Weston Filmo 650	21.45	19.95	✓✓✓✓	✓✓✓✓✓✓✓✓✓✓	f/1	f36	8 frames per sec.	64 frames per sec.	1/4 stops	✓✓✓✓✓✓✓✓✓✓	1.5	250	38°	Weston Electric Instrument Co.
22	Weston Junior 850	16.50	15.50	✓✓✓✓	✓✓✓✓✓✓✓✓✓✓	f2	f32	64	1/1000	1/4 stops	✓✓✓✓✓✓✓✓✓✓	2	500	89°	Weston Electric Instrument Co.
23	Weston Letcameter 715	26.00 (lined) 25.25 (unlined)	24.00	✓✓✓✓	✓✓✓✓✓✓✓✓✓✓	f1.5	f36	64	1/1000	1/4 stops	✓✓✓✓✓✓✓✓✓✓	.3	800	30° (High) 80° (Low)	Weston Electric Instrument Co.
24	Weston Master Universal 715	26.00 (lined) 25.25 (unlined)	24.00	✓✓✓✓	✓✓✓✓✓✓✓✓✓✓	f1.5	f32	100	1/1200	1/4 stops	✓✓✓✓✓✓✓✓✓✓	.3	800	30° (High) 80° (Low)	Weston Electric Instrument Co.
25	Weston Studio 628, type 2	99.00		✓✓✓✓	✓✓✓✓✓✓✓✓✓✓	f1.5 (low range) f4 (high range)	f32 (low range) f64 (high range)	5 min. (low range) 30 (high range)	1/100 range 1/1000 range	1/4 stops	✓✓✓✓✓✓✓✓✓✓	1	250	60°	Weston Electric Instrument Co.
26	Weston Universal 650	21.45	19.95	✓✓✓✓	✓✓✓✓✓✓✓✓✓✓	f1.5	f32	100	1/1200	1/4 stops	✓✓✓✓✓✓✓✓✓✓	1	250	60°	Weston Electric Instrument Co.

## EXPOSURE METERS — VISUAL EXTINCTION

101	Argus Vest Pocket (Photar)		.25	✓✓✓✓✓✓✓✓✓✓	✓✓✓✓✓✓✓✓✓✓	f2	f22	30	1/1000	Full stops	✓✓✓✓✓✓✓✓✓✓	2	250		International Research Corp.
102	Cine, Univex	1.95		✓✓✓✓✓✓✓✓✓✓	✓✓✓✓✓✓✓✓✓✓	f1.3	f32	8 frames per sec.	128 frames per sec.	1/2 stops	✓✓✓✓✓✓✓✓✓✓	3	96		Universal Camera Corp.
103	Durex	2.25		✓✓✓✓✓✓✓✓✓✓	✓✓✓✓✓✓✓✓✓✓	f1.5	f32	10	1/1000	Stops	✓✓✓✓✓✓✓✓✓✓	4	100	30°	Durex Mfg. Co.
104	Expophot		1.75	✓✓✓✓✓✓✓✓✓✓	✓✓✓✓✓✓✓✓✓✓	f1	f64	30 min.	1/1000	Full stops	✓✓✓✓✓✓✓✓✓✓	14°S 7/10D	29°S 22/10D	50°	Photo Utilities, Inc.
105	Imperial II		1.50	✓✓✓✓✓✓✓✓✓✓	✓✓✓✓✓✓✓✓✓✓	f2.8	f22	64	1/1000	Full stops	✓✓✓✓✓✓✓✓✓✓	23°	29°		Cheese-United Co.
106	Instascope, for Graflex	3.10		✓✓✓✓✓✓✓✓✓✓	✓✓✓✓✓✓✓✓✓✓	f2.5	f22	30 min.	1/1000	Full stops	✓✓✓✓✓✓✓✓✓✓	17°	29°		Willoughby's Folmer Graflex Corp.
107	Intotocine	2.25		✓✓✓✓✓✓✓✓✓✓	✓✓✓✓✓✓✓✓✓✓	f1	f45	8 frames per sec.	96 frames per sec.	Full stops	✓✓✓✓✓✓✓✓✓✓	13°	27°	50°	Photo Utilities, Inc.
108	Instascope	2.25		✓✓✓✓✓✓✓✓✓✓	✓✓✓✓✓✓✓✓✓✓	f1.4	f22	30 min.	1/1000	Full stops	✓✓✓✓✓✓✓✓✓✓	17°	31°	50°	Photo Utilities, Inc.

## EXPOSURE METERS — VISUAL EXTINCTION

[illegible]

## EXPOSURE METERS — CALCULATORS

201	Draucker Day light	.60	3 in a case 1.85	✓	✓	✓	✓	✓	f1.5	f/64	4	1/1000	¾ stops	✓	✓				6	200	Munder Electrical Co.
202	Draucker Photoflash	.50			✓			✓	f1.5	f/64	5	1/200	¾ stops	✓	✓				2	250	Munder Electrical Co.
203	Draucker Photo flood	.60			✓			✓	f1.5	f/64	5	1/600	¾ stops	✓	✓				6	100	Munder Electrical Co.
204	Fotimer		1.00	✓	✓	✓	✓	✓	f1	f/16	4 hrs.	1/500	½ stops	✓	✓				16°	34°	George Murphy, Inc.
205	Fotimer No. 2	2.00		✓	✓	✓	✓	✓	f1	f/720	4 hrs.	1/1500	¾ stops	✓	✓			✓	f/1	f/720	George Murphy, Inc.
206	Fotimer B40N		2.00	✓	✓	✓	✓	✓	f1	f/720	12,000	1/1500	¾ stops	✓				✓	f/1	f/720	George Murphy, Inc.
207	Photrix Exposure Calculator		2.25						f1	f/45	15 min.	1/1000 <sup>a</sup> , fractional			✓	✓					Intercontinental Mar- keting Corp.
208	Quick-Set G	1.00		✓				✓	f3.5	f/32	1	1/500	Full stops	✓	✓			6°	32°		Whitehall Specialty Co.
209	"Wellcome" Photo- graphic Exposure Calculator		.75	✓	✓	✓	✓	✓	f1.8	f/16	Hours	1/1200	Full stops	✓	✓			9°	34°		Burroughs Wellcome & Co., (U. S. A.), Inc.

## EXPOSURE METERS — TINT MATCHING

		1.75	f/4	f/90	1/500	1/500 stops	Full stops	22	500	120°	George Murphy, Inc.
301	Watkins Bee	✓	✓	f/22	1	✓	✓	✓	700		George Murphy, Inc.
302	Watkins Bee	✓	✓	f/2	64	✓	✓	✓	156	20°	George Murphy, Inc.
303	Wynne Hunter	✓	✓	f/156	64	✓	✓	✓	2	20°	George Murphy, Inc.

# EXPOSURE METERS, ELECTRONIC (See tables beginning on p. 98)



PHOTRIX S 5, \$18.75



GENERAL ELECTRIC, \$19.50



MINI PHOTOSCOP, \$14.75



HORVEX, Standard, \$21.50



MINI, \$12.50



WESTON MASTER, \$24



ELECTROPHOT, \$10



TEMPIPHOT, \$19.75



WESTON Junior 850, \$15.50



EOS, \$13.75



MAXIM, \$1.75



DUREX, \$2.25



PIERCE, \$1.85

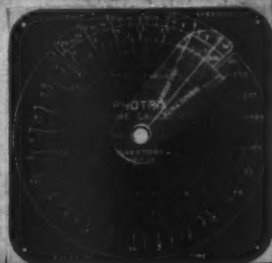


UNIVEX Cmo, \$1.95

## EXPOSURE METERS, VISUAL EXTINCTION



WELLCOME Calculator, \$ .75



PHOTRIX Calculator, \$2.25



ARGUS Vest Pocket, \$ .25

## CINE CAMERAS

Line Number	Name of Cine Camera	Price	Film				Lens				Lenses interchangeable	View-finder	Turret capacity	Telescopic	Revolving drum	Waist level reflecting	Parallax adjustment
			Magazine loading	Film Capacity (feet)	Spring Run (feet per wind)	Automatic threading	Make and Formula	Focal length in inches	Aperture	Aperture, smallest	Type						
1	Bolex H <sub>2</sub> 8	275.00		100	14	✓	Meyer Kino-Plasmat	¾	f1.5	f16	Anastigmat	✓	3	✓			✓
2	Cine-Kodak 8-20	29.50		25	5½		Kodak	¾	f3.5	f16	Anastigmat						
3	Cine-Kodak 8-25	42.00		25	5½		Kodak	¾	f2.7	f16	Anastigmat						
4	Cine-Kodak 8-60	67.50		25	5½		Kodak	¾	f1.9	f16	Anastigmat	✓		✓			
5	*Excel 39	35.30		50					f3.5	f16	Anastigmat						
6	*Keystone K8	26.50		30	5		Wollensak	¾	f3.5	f16	Anastigmat	✓		✓			
7	*Keystone K8	34.00		30	5		Wollensak	¾	f2.7	f16	Anastigmat	✓		✓			
8	*Keystone K8	57.00		30	5		Wollensak	¾	f1.9	f16	Anastigmat	✓		✓			
9	*Movi <del>on</del> 8	215.00		25	12		Zeiss Sonnar	¾	f2	f11	Anastigmat			✓			
10	Revere C-8	23.95		30			Wollensak	¾	f3.5	f16	Anastigmat	✓		✓			
11	Revere C-8	29.50		30			Wollensak	¾	f2.7	f32	Anastigmat	✓		✓			
12	Revere C-8	52.50		30			Wollensak	¾	f1.9	f32	Anastigmat	✓		✓			
13	Univex B-8	9.95		30	6		Ilex	¾	f5.6	f16	Meniscus	✓		✓			✓
14	Univex B-8	19.95		30	6		Wollensak	¾	f3.5	f16	Anastigmat	✓		✓			✓
15	Univex C-8	15.00		30	6		Ilex	¾	f4.5	f11	Anastigmat	✓		✓			
16	Univex C-8	21.50		30	6		Wollensak	¾	f3.5	f16	Anastigmat	✓		✓			
17	Univex C-8	21.90		30	6		Ilex	1	f3.5	f16	Anastigmat	✓		✓			
18	Univex C-8	27.50		30	6		Wollensak	¾	f2.7	f16	Anastigmat	✓		✓			
19	Univex C-8	47.25		30	6		Wollensak	¾	f1.9	f16	Anastigmat	✓		✓			
20	Univex C-8	48.45		30	6		Wollensak	1½	f3.5	f32	Anastigmat	✓		✓			
21	Univex Turret-8	25.00		30	6		Ilex	¾	f4.5	f11	Anastigmat	✓	3	✓			
22	Univex Turret-8	29.95		30	6		Wollensak	¾	f3.5	f16	Anastigmat	✓	3	✓			
23	Univex Turret-8	30.95		30	6		Ilex	1	f3.5	f16	Anastigmat	✓	3	✓			
24	Univex Turret-8	40.00		30	6		Wollensak	¾	f2.7	f16	Anastigmat	✓	3	✓			
25	Univex Turret-8	57.50		30	6		Wollensak	1½	f3.5	f32	Anastigmat	✓	3	✓			
26	Univex Turret-8	59.75		30	6		Wollensak	¾	f1.9	f16	Anastigmat	✓	3	✓			

## CINE CAMERAS

101	Emel C-93	197.50		50	12		Hermagor	¾	f1.9		Anastigmat	✓	3	✓			✓
102	Filmo "Aristocrat"	140.00		25	5		Taylor-Hobson	¾	f2.5	f16	Anastigmat	✓	3	✓			
103	Filmo "Companion"	49.50		25	5		Bell & Howell	¾	f3.5	f16	Anastigmat	✓		✓			
104	Filmo "Sportster"	75.00		25	5		Taylor-Hobson	¾	f2.5	f16	Anastigmat	✓		✓			

\*Takes double-8 also.

# 8 MM.

Matter for lenses	Focusing			Shutter			Size (in inches)	Weight	Features							Source	Line Number	
	Fixed	By footage scale	Focuses as close as	Speeds (frames per second)	Speed at 16 frames per second	Opening (degrees)			Film reverse	Single frame release	Tripod socket	Starting button lock	Bell stop	Positive start	Exposure guide			Footage indicator
✓	✓	9"	✓	8-64	1/29	196	8½x6x3½	5 lbs.	✓	✓	✓	✓	✓	✓	✓	American Bolex Co.	1	
	✓			16	1/34	167½							✓			Eastman Kodak Co.	2	
	✓			16	1/34	167½							✓			Eastman Kodak Co.	3	
		✓		16	1/34	167½							✓			Eastman Kodak Co.	4	
							6½x4½x2	3 lbs.								Excel Projector Co.	5	
	✓			12, 16, 64	1/40	140	2¾x6½x1¾	1 lb. 12 oz.		✓	✓	✓	✓	✓	✓	Keystone Mfg. Co.	6	
	✓			12, 16, 64	1/40	140	2¾x6½x1¾	1 lb. 12 oz.		✓	✓	✓	✓	✓	✓	Keystone Mfg. Co.	7	
				12, 16, 64	1/40	140	2¾x6½x1¾	1 lb. 12 oz.		✓	✓	✓	✓	✓	✓	Keystone Mfg. Co.	8	
✓	✓			8, 16, 64	1/30	180	5½x4x5½	3 lbs. 4 oz.	✓	✓	✓	✓	✓	✓	✓	Carl Zeiss ,Inc.	9	
				8, 12, 16, 24, 32	1/35	166	4¾x3¾x1¾	1 lb. 12 oz.		✓		✓	✓	✓	✓	Revere Camera Co.	10	
				8, 12, 16, 24, 32	1/35	166	4¾x3¾x1¾	1 lb. 12 oz.		✓		✓	✓	✓	✓	Revere Camera Co.	11	
				8, 12, 16, 24, 32	1/35	166	4¾x3¾x1¾	1 lb. 12.oz.		✓		✓	✓	✓	✓	Revere Camera Co.	12	
	✓			16	1/30		4¾x3¾x1¾	1 lb. 7½ oz.		✓		✓	✓	✓	✓	Universal Camera Corp.	13	
	✓			16	1/30		4¾x3¾x1¾	1 lb. 7½ oz.		✓		✓	✓	✓	✓	Universal Camera Corp.	14	
				16	1/30		4x3½x1¾	1 lb. 7 oz.		✓		✓	✓	✓	✓	Universal Camera Corp.	15	
	✓			16	1/30		4x3½x1¾	1 lb. 7 oz.		✓		✓	✓	✓	✓	Universal Camera Corp.	16	
	✓			16	1/30		4x3½x1¾	1 lb. 7 oz.		✓		✓	✓	✓	✓	Universal Camera Corp.	17	
	✓			16	1/30		4x3½x1¾	1 lb. 7 oz.		✓		✓	✓	✓	✓	Universal Camera Corp.	18	
				16	1/30		4x3½x1¾	1 lb. 7 oz.		✓		✓	✓	✓	✓	Universal Camera Corp .	19	
				16	1/30		4x3½x1¾	1 lb. 7 oz.		✓		✓	✓	✓	✓	Universal Camera Corp.	20	
✓	✓			16	1/30		5x4x2½	1 lb. 13 oz.		✓		✓	✓	✓	✓	Universal Camera Corp.	21	
✓	✓			16	1/30		5x4x2½	1 lb. 13 oz.		✓		✓	✓	✓	✓	Universal Camera Corp.	22	
✓		✓	1	16	1/30		5x4x2½	1 lb. 13 oz.		✓		✓	✓	✓	✓	Universal Camera Corp.	23	
✓	✓			16	1/30		5x4x2½	1 lb. 13 oz.		✓		✓	✓	✓	✓	Universal Camera Corp.	24	
✓	✓	1'		16	1/30		5x5x2½	1 lb. 13 oz.		✓		✓	✓	✓	✓	Universal Camera Corp.	25	
✓	✓	1'		16	1/30		5x5x2½	1 lb. 13 oz.		✓		✓	✓	✓	✓	Universal Camera Corp.	26	

## DOUBLE-8

✓	✓	3'		8, 16, 24 48, 64	1/30	30	6x6x6	2½ lbs.	✓	✓	✓	✓	✓	✓	✓	✓	Raygram Corp.	101
	✓		✓	16, 32, 48, 64	1/35	166	3¾x3¾x5	30 oz.		✓	✓			✓	✓	✓	Bell & Howell Co.	102
✓	✓			8, 16, 24, 32	1/35	166	1¾x3x5	24 oz.		✓	✓			✓	✓	✓	Bell & Howell Co.	103
✓	✓			16, 32, 48, 64	1/35	166	1¾x3x5	24 oz.		✓	✓			✓	✓	✓	Bell & Howell Co.	104

# CINE CAMERAS

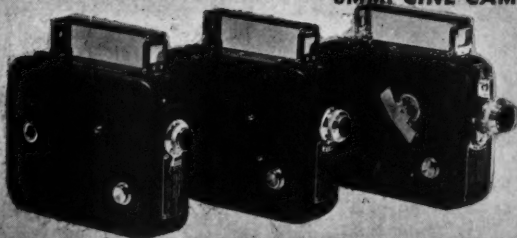
Line Number	Name of Cine Camera	Price	Film				Lens						Lenses interchangeable	Turret capacity	View-finder			
			Magazine loading	Film Capacity (feet)	Spring Run (feet per wind)	Automatic threading	Make and Formula	Focal length in inches	Aperture	Aperture, smallest	Type	Telescopic			Revolving drum	Waist level reflecting	Parallax adjustment	
201	Bolex	275.00		100	20	✓	Hugo-Meyer	1	f1.5	f16	Anastigmat	✓	3	✓			✓	
202	Bolex	295.00		100	20	✓	Leitz Hektor	1.05	f1.4	f16	Anastigmat	✓	3	✓			✓	
203	Cine-Kodak E	39.50		100	16		Kodak	¾	f3.5	f16	Anastigmat			✓				
204	Cine-Kodak K	80.00		100	13		Kodak	1	f1.9	f16	Anastigmat	✓		✓		✓		
205	Cine-Kodak Special	417.50		200	39		Kodak	1	f1.9	f16	Anastigmat	✓	2	✓				
206	Filmo 70-DA	193.00		100	24		Taylor-Hobson	1	f2.7	f16	Anastigmat	✓	3	✓				
207	Filmo 70-DA	223.00		100	24		Taylor-Hobson	1	f1.5	f16	Anastigmat	✓	3	✓				
208	Filmo 70-E	99.50		100	24		Taylor-Hobson	1	f2.7	f16	Anastigmat	✓		✓				
209	Filmo 70-E	114.50		100	24		Taylor-Hobson	1	f2.7	f16	Anastigmat	✓		✓				
210	Filmo 70-E	145.00		100	24		Taylor-Hobson	1	f1.5	f16	Anastigmat	✓		✓				
211	Filmo 141-A	115.00	✓	50	12½		Taylor-Hobson	1	f2.7	f16	Anastigmat	✓		✓				
212	Filmo 141-B	138.00	✓	50	12½		Bell & Howell	1	f1.9	f16	Anastigmat	✓		✓				
213	Filmo 141-B	160.50	✓	50	12½		Taylor-Hobson	1	f1.5	f16	Anastigmat	✓		✓				
214	Irwin Imperial 24	22.50	✓	40	5	✓	Ilex Optical	1	f4.5	f22	Anastigmat			✓				
215	Irwin Imperial 23	25.95	✓	40	5	✓	Ilex Optical	1	f4.5	f22	Anastigmat			✓				
216	Irwin Imperial 22	29.95	✓	40	5	✓	Ilex Optical	1	f3.5	f16	Anastigmat			✓				
217	Irwin Imperial 21	34.95	✓	40	5	✓	Ilex Optical	1	f3.5	f16	Anastigmat			✓				
218	Keystone A3	35.00		100	18		Wollensak	1	f3.5	f16	Anastigmat	✓		✓				
219	Keystone A3	67.50		100	18		Wollensak	1	f1.5	f16	Anastigmat	✓		✓				
220	Keystone A7	44.50		100	18		Wollensak	1	f2.7	f16	Anastigmat	✓		✓				
221	Keystone A7	71.00		100	18		Wollensak	1	f1.5	f16	Anastigmat	✓		✓				
222	Keystone B1	29.95		100	18		Ilex	1	f3.5	f16	Anastigmat	✓		✓				
223	Magazine Cine-Kodak	117.50		50	11		Kodak	1	f1.9	f16	Anastigmat	✓		✓				
224	Movikon	385.00		100	20		Zeiss Sonnar	1	f1.4	f22	Anastigmat	✓		✓			✓	
225	R.C.A. 16mm. Sound	250.00		100 400	40			1				✓	3	✓			✓	
226	Victor 3	82.00		100	27		Victor	1	f2.7	f16	Anastigmat	✓		✓			✓	
227	Victor 4	145.00		100	27		Wollensak	1	f1.5	f16	Anastigmat	✓	2	✓			✓	
228	Victor 5	197.50		100	27		Wollensak	1	f1.5	f16	Anastigmat	✓	2	✓			✓	



# 16 MM.

Matten for lenses	Focusing			Shutter			Size (in inches)	Weight	Features							Source	Line Number
	Fixed	By footage scale	Focuses as close as	Ground glass, magnifier	Speeds (frames per second)	Speed at 16 frames per second			Film reverse	Single frame release	Tripod socket	Starting button lock	Bell stop	Positive start	Exposure guide		
✓	✓	18"	✓		8-64 incl.	1/29	196	8½x6x3½	5 lbs.	✓	✓	✓	✓	✓	✓	American Bolex Co.	201
✓	✓	2'	✓		8-64 incl.	1/29	196	8½x6x3½	5 lbs.	✓	✓	✓	✓	✓	✓	American Bolex Co.	202
✓					16, 32, 64	1/34	167½								✓	Eastman Kodak Co.	203
					16, 32, 64	1/34	167½								✓	Eastman Kodak Co.	204
					8, 16, 24, 32, 64	1/34	165		✓				✓	✓	✓	Eastman Kodak Co.	205
	✓	2'	✓		8, 12, 16, 24, 32, 48, 64	1/28	204	Irregular shape	5 lbs. 8 oz.		✓	✓	✓	✓	✓	Bell & Howell Co.	206
	✓	2'	✓		8, 12, 16, 24, 32, 48, 64	1/28	204	Irregular shape	5 lbs. 8 oz.		✓	✓	✓	✓	✓	Bell & Howell Co.	207
	✓				8, 16, 24, 64	1/28	204	Irregular shape	5 lbs.		✓			✓	✓	Bell & Howell Co.	208
					8, 16, 24, 64	1/28	204	Irregular shape	5 lbs.		✓			✓	✓	Bell & Howell Co.	209
				✓	8, 16, 24, 64	1/28	204	Irregular shape	5 lbs.		✓			✓	✓	Bell & Howell Co.	210
	✓				8, 16, 24, 32	1/43	133	2x3½x5½	39½ oz.	✓	✓	✓	✓	✓	✓	Bell & Howell Co.	211
	✓	1'			16, 32, 48, 64	1/43	133	2x3½x5½	39½ oz.	✓	✓	✓	✓	✓	✓	Bell & Howell Co.	212
	✓	1'			16, 32, 48, 64	1/43	133	2x3½x5½	39½ oz.	✓	✓	✓	✓	✓	✓	Bell & Howell Co.	213
	✓				16		190	5x4x2	2 lbs. 6 oz.	✓	✓	✓	✓	✓	✓	Irwin Corp.	214
	✓				8, 12, 16, 24		190	5x4x2	2 lbs. 6 oz.	✓	✓	✓	✓	✓	✓	Irwin Corp.	215
	✓				16		190	5x4x2	2 lbs. 6 oz.	✓	✓	✓	✓	✓	✓	Irwin Corp.	216
	✓				8, 12, 16, 24		190	5x4x2	2 lbs. 6 oz.	✓	✓	✓	✓	✓	✓	Irwin Corp.	217
✓	✓				10, 16, 64	1/36	160	9x4x2½	4 lbs.		✓	✓	✓	✓	✓	Keystone Mfg. Co.	218
✓	✓	2'			10, 16, 64	1/36	160	9x4x2½	4 lbs.		✓	✓	✓	✓	✓	Keystone Mfg. Co.	219
✓	✓				10, 16, 24, 32, 40, 48, 64	1/36	160	9x4x2½	4 lbs.		✓	✓	✓	✓	✓	Keystone Mfg. Co.	220
✓	✓	2'			10, 16, 24, 32, 40, 48, 64	1/36	160	9x4x2½	4 lbs.		✓	✓	✓	✓	✓	Keystone Mfg. Co.	221
✓	✓				16	1/36	160	9x4x2½	4 lbs.		✓	✓	✓	✓	✓	Keystone Mfg. Co.	222
					16, 32, 64	1/34	167½							✓	✓	Eastman Kodak Co.	223
✓	✓	4'			12, 16, 24, 64	1/30- 1/300	180	2¾x6½x8	5 lbs. 12 oz.	✓	✓	✓		✓	✓	Carl Zeiss, Inc.	224
	✓				16, 24	1/30	210		8½ lbs.		✓	✓		✓	✓	R. C. A. Mfg. Co.	225
✓	✓	5'			8, 16, 24, 32, 72	1/28	205	3¾x8x6	68 oz.		✓	✓	✓	✓	✓	Victor Animatograph Corp.	226
✓	✓	1½'			8, 16, 24 32, 72	1/28	205	3¾x8x6	70 oz.		✓	✓	✓	✓	✓	Victor Animatograph Corp.	227
✓	✓	1½'			8, 16, 24, 32, 72	1/28	205	3¾x8x6	70 oz.	✓	✓	✓	✓	✓	✓	Victor Animatograph Corp.	228

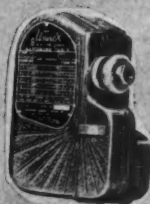
# 8MM. CINE CAMERAS



**CINE-KODAK**  
8-20, f3.5, \$29.50

**CINE-KODAK**  
8-25, f2.7, \$42

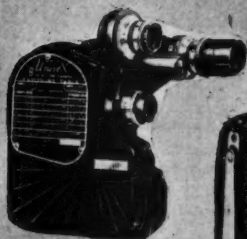
**CINE-KODAK**  
8-60, f1.9, \$67.50



**UNIVEX**  
C-8, f4.5, \$15



**UNIVEX B-8**  
f5.6, \$9.95



**UNIVEX Turret**  
f3.5, \$29.95



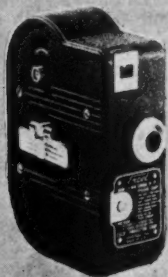
**MOVIKON 8**, f2, \$215



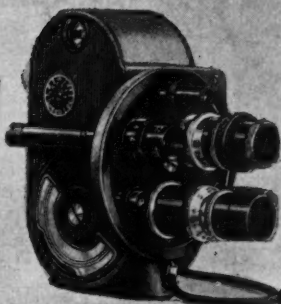
**KEYSTONE K8**  
f3.5, \$26.50



**REVERE C-8**  
f3.5, \$23.95



**EXCEL 39**  
f3.5, \$35.30



**FILMO Aristocrat**, f2.5, \$140



**FILMO Sportster**, f2.5, \$75

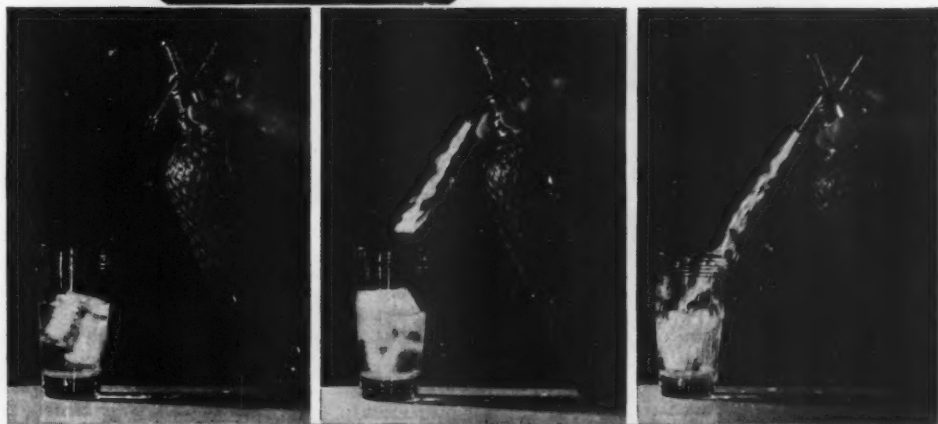


**BOLEX H-8**  
f1.5, \$275

# DOUBLE-8 CINE CAMERAS

# NOT MAGIC EYE SHOTS

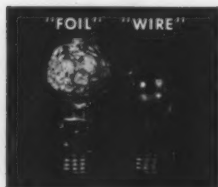
...but a sequence  
shot at 1/1000 with  
the New No. 30  
G-E Flash bulbs



Made at 1/1000. Alike in lighting. 3 or 300 shots of a given set-up will show uniform negative density.

**NEW G-E FLASH BULBS GIVE YOU *Uniform Performance!***

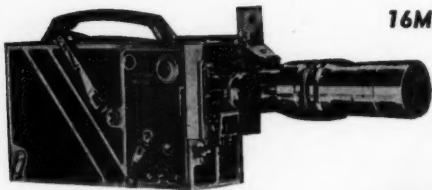
Look at that center picture, with the stream from the syphon bottle caught in mid-air! Here's picture proof that the new G-E MAZDA Photoflash lamps stop action. Unexcelled in uniformity of flash, too. • And, you get the added advantage of the new G-E safety-jacketed bulbs that act like shatter-proof glass. Quick-break filaments make for better synchronizer operation and assure flashing even on weakened cells. Have you tried a G-E flash bulb lately?



**GENERAL  ELECTRIC**  
**MAZDA PHOTOFLASH LAMPS**

A "peak" for every picture need. For speedy action and focal-plane use, No. 30 and No. 31. For general use, No. 16, No. 7, and No. 11—and for extra covering power, No. 21.

## 16MM. CAMERAS



CINE-KODAK Special, f1.9, \$417.50



FILMO 141-B, f1.9, \$138

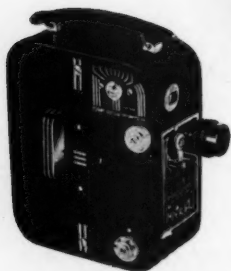


FILMO 70-DA, f2.7, \$193

VICTOR Model 4, f1.5, \$145



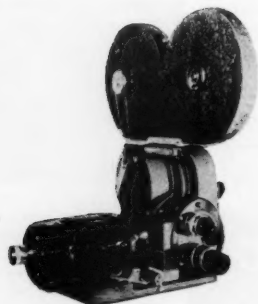
KEYSTONE A-3, f3.5, \$35



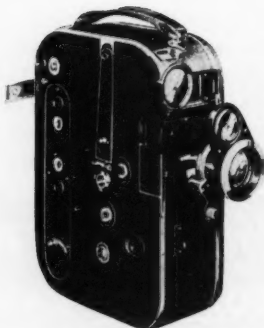
IRWIN Imperial 24, f4.5, \$22.50



VICTOR MODEL 3, f2.7, \$82



R.C.A. Sound, \$250



MOVIKON, f1.4, \$385



BOLEX, f1.5, \$275

# argus ANNOUNCES THE

## *Jig-A-Mat*

REGISTERED TRADE MARK



### A NEW AND EASY WAY TO MAKE PHOTOMONTAGES



- 1 Slip in the sensitized paper.
- 2 Expose the section you want to print.
- 3 Depress the numbered record lever.

Now anyone can make excellent photomontages . . . easily! The Argus Jig-A-Mat exposes one section at a time. Keeps a record of each section exposed. Test *your* skill at composing with this exciting, dramatic form of photography. Over 4,000 combinations possible! Makes a fine 8x10 masking easel. Be among the first to use it. Costs you only \$6.75.

• Write us for information or see your local dealer.



Over 4,000 Combinations Possible. Makes a Splendid 8x10 Masking Easel

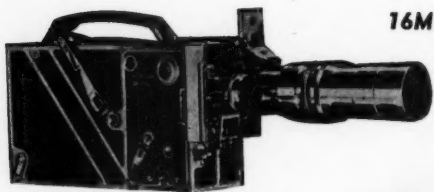
International Research Corporation  
332 Fourth Street, Ann Arbor, Michigan

Please send me further information on the Argus Jig-A-Mat.

Name \_\_\_\_\_

Address \_\_\_\_\_

## 16MM. CAMERAS



CINE-KODAK Special, f1.9, \$417.50



FILMO 141-B, f1.9, \$138

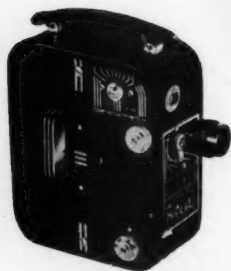


FILMO 70-DA, f2.7, \$193

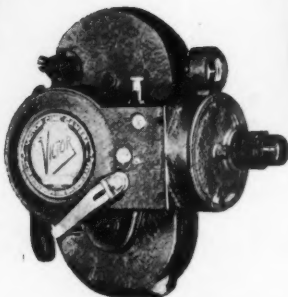
VICTOR Model 4, f1.5, \$145



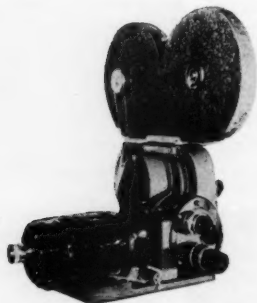
KEYSTONE A-3, f3.5, \$35



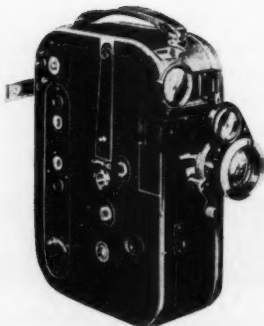
IRWIN Imperial 24, f4.5, \$22.50



VICTOR MODEL 3, f2.7, \$82



R.C.A. Sound, \$250



MOVIKON, f1.4, \$385



BOLEX, f1.5, \$275



# argus ANNOUNCES THE

## *Jig-A-Mat*

REGISTERED TRADE MARK



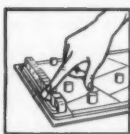
### A NEW AND EASY WAY TO MAKE PHOTOMONTAGES



**1** Slip in the sensitized paper.



**2** Expose the section you want to print.



**3** Depress the numbered record lever.

Now anyone can make excellent photomontages . . . easily! The Argus Jig-A-Mat exposes one section at a time. Keeps a record of each section exposed. Test *your* skill at composing with this exciting, dramatic form of photography. Over 4,000 combinations possible! Makes a fine 8x10 masking easel. Be among the first to use it. Costs you only \$6.75.

• Write us for information or see your local dealer.



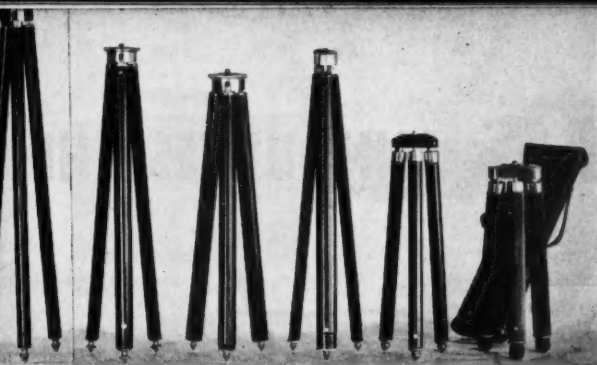
Over 4,000 Combinations Possible. Makes a Splendid 8x10 Masking Easel

International Research Corporation  
332 Fourth Street, Ann Arbor, Michigan

Please send me further information on the Argus Jig-A-Mat.

Name \_\_\_\_\_

Address \_\_\_\_\_



TRIM LOOKING REKO TRIPODS are made in a number of sizes. From left to right: Nos. 29 and 33 have a maximum height of 47½"; 35 and 37 of 46". Designed for miniature cameras, No. 39 can be extended to 45½" and No. 41 to 43½". FIG. 1

# HOW to BUY and USE a TRIPOD

By FRED A. LENFESTEY

Illustrated by the Author

**P**HOTOGRAPHERS with an *f*4.5 lens or faster think of a tripod as a device for holding a camera steady while taking time exposures and consider it an unnecessary piece of equipment for any other type of work. Yet commercial photo finishers list camera movement and improper focusing as the faults most frequently found in amateur pictures. Camera movement is particularly important in miniature cameras. Good enlargements cannot be made from blurred negatives. It is usually recommended that a tripod be used for all pictures made at a speed slower than 1/100th of a second.

A tripod not only holds a camera steady for exposures but it keeps the camera in position before the exposure. This allows the photographer to devote his entire attention to composing and lighting his sub-

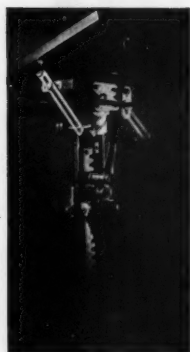
ject. Obtaining the advantages of ground-glass focusing is enough in itself to make a tripod a good investment. If a ground glass camera is being used, it is easy to watch the image of a scene until the desired depth of focus is obtained.

There is a logical sequence of movements that saves time and trouble in setting up a tripod.

*First*, without spreading the legs, hold the tripod vertically in front of you, with the head a few inches above the height desired. Let one leg drop to the ground and lock it in position.

*Second*, still without spreading the legs, drop the other two legs to the ground and lock them. This insures all three legs being extended the same distance.

*Third*, grasp a leg in each hand about 18 inches below the head. This will leave



THIS AGFA UNIVERSAL tripod (left) combines rack and pinion extension with a double tilting board which gives sufficient support for large studio cameras. FIG. 2



THE METAL TIPS (left) on the Brooks Pocket tripod can be covered with removable rubber tips when the tripod is used on slippery surfaces. FIG. 3



LEITZ TABLE TOP tripod (above) can be carried in the pocket when not in use. FIG. 6



BEE WEE NECK-POD (left) is worn around the photographer's neck to support miniature cameras. FIG. 4



ONE-LEGGED SPORTPOD used with miniature cameras. FIG. 5

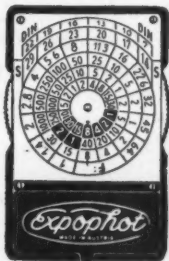
## EXPOPHOT EXPOSURE METER

Sets with a touch of the fingertip — for all stops and film speeds.

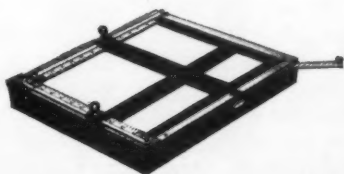
You read it like a book, breast high.

Dustproof when closed — no case needed. Ready instantly for all occasions.

Very small, very light, fits the vest pocket. A meter that's practical and efficient AT THE LOWEST PRICE at which an ideal exposure meter has ever been offered. PRICE...



**\$1.75**



## WILLO FAVORITE EASEL

A COMBINED PAPER STORAGE BOX AND ENLARGING EASEL

that reduces the movements involved in the enlarging routine to a minimum. The easel is actually the cover of the paper storage box and requires but the lifting of the cover to obtain a sheet of paper, thus saving steps.

**\$9.75**

LARGEST  
EXCLUSIVE  
CAMERA  
SUPPLY  
HOUSE

*Willoughbys*

110 WEST 32ND ST., N. Y.



## WILLO NEGATIVE CARRIERS

Smooth, scratch-proof "book" type negative holder made of durable, stainless steel, and available in two sizes: 24x36mm. (1x1½") and 6x6 cm. (2¼ x 2¼"). Accurate design assures perfect masking to the practical dimensions of the negative. Removal and insertion of negatives made convenient by provision of a "lip" at the two free corners of the carrier.

35mm. (24 x 36mm.) ..... **\$1.00**

6 x 6cm. (2¼ x 2¼) ..... **\$2.00**



## WILLO DeLUXE VISIBLE DODGER FOR CONTROLLED PROJECTION PRINTS

U. S. Patent No. 2,088,710

The WILLO DeLUXE VISIBLE DODGER provides a means of accurately confining spot or local printing, vignetting or dodging to pre-selected areas when projection prints are made.

With this positive control of the actinic light, portions of a picture can be accentuated and undesirable details can be eliminated, controlled or emphasized. Essentially then, the WILLO DeLUXE VISIBLE DODGER allows the operator to "Paint with Light".

**\$2.00**

MAIL  
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WHEN SETTING UP any tripod, hold it vertically in front of you with the head a few inches above the height desired. Let one leg drop to the ground and lock it in position. FIG. 7



NEXT drop the 'other legs to the ground and lock them. This insures all three legs being extended the same distance. FIG. 8



GRASP A LEG in each hand about 18 inches below the head. This will leave the free leg directly to the front. Hold the tripod out at arms' length and set the free leg down, drawing the other two legs back, one on each side of your body. FIG. 9

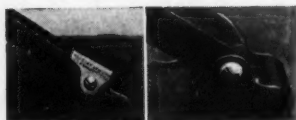
the free leg directly to the front. Hold the tripod out at arms' length and set the free leg down, drawing the other two legs back, one on each side of your body. The tripod points should approximately form an equilateral triangle. This method of setting up the tripod gives complete control of positioning and saves readjusting each leg separately. The camera should be placed on the tripod with the lens pointing over the front leg, leaving working space between the other two legs.

In buying a tripod be sure that it is rigid. Large cameras require a heavy tripod and even light cameras need some weight in the tripod to give stability and steadiness. If camera and tripod combined weigh only a few ounces every footstep and breeze will shake them. Extended height of the tripod should be at least 48 inches; a height 55 to 60 inches is even better. The smaller the tripod is when closed, the greater the convenience in carrying. This is offset by the fact that a leg made up of three or four short sections sometimes develops more play and wobble than one made of two sections. Large, knurled knobs or wing-nuts that clamp the whole leg joint will help prevent trouble here.

Be sure the tripod has good reversible tips. A soft rubber tip is needed for smooth, slippery surfaces and a sharp spike for rough surfaces. Some tripods have one style of tip on each end of the last leg section which may be pulled out and reversed. Others have pivoted rubber shoes that swing over the spikes.

Be extremely critical of the method by which the legs are swiveled to the head. Side play or loose bearings should be avoided. Do not buy a tripod in which the pivots bear directly against wood, since wood will compress and wear. The most desirable type is that on which the leg swivel may be tightened by means of a knob or wing-nut so that the leg may be made rigid in relation to the head. This not only takes all play out of the tripod, but it also prevents the legs from slipping or spreading farther apart. Some tripods

(Page 116, please)



REVERSIBLE TIP on the Thalhammer tripod (left) provides interchangeable spikes to engage a rough surface or rubber tips for polished floors. FIG. 10

**OVEREXPOSED..  
UNDEREXPOSED..  
NOT A DECENT PICTURE  
IN THE LOT...**



**I USED TO SAY THAT...  
BEFORE I FIRST USED  
THE P & H PROCESS...  
NOW I NEVER MISS**



*Developed in D7...3 1/4 x 4 1/4 Graflex...  
1-50 sec. at F:11...on Agfa Isopan  
Film...Print on E.K. Kodabrom F-2.*



*Developed by P & H Process. Other  
data identical with picture at left.*



**\$2.50**  
for 35 MM

*Model R 20  
illustrated  
price \$3.50*

## **P & H DEVELOPING PROCESS CORRECTS MISTAKES**

Acclaimed by professionals, easily and successfully used by amateurs, the revolutionary new P&H Developing Process not only produces better results but *actually corrects mistakes*.

Overexposure—underexposure on the same roll . . . are both corrected in one operation by this simple-to-use *method of picture development*. Produce better detail in shadow, more brilliant highlight . . . achieve a 3-dimensional effect . . . save dark room time . . . take *chance* out of your work . . . by using the P&H Process for all of your developing.

Not just another chemical developer, the P&H Process is basically *different* in theory and principle and it is now sold at a price that anyone can afford—\$2.50 to \$17.75. The use of P&H Deep Tanks is recommended, although you can use your present equipment with the Process. Use Perol 33 as a developer and hardener. For only 80c you can make up enough developer for 30 to 50 rolls of 35mm. film.

Resolve now to reduce halation—produce finer grain—get better balance of printing density—*increase film speed 2 to 4 times—correct mistakes*—ask your dealer for full details today. If he can not furnish complete information, send for free illustrated booklet. Let us show you what the P&H Process will do for you—how you can enter a new era of camera pleasure. . . Write to P&H Corporation, Dept. 11M.

# **P & H DEVELOPING PROCESS**

P & H CORPORATION, 7000 ROMAINE STREET • HOLLYWOOD, CALIFORNIA

# Being CRITICAL

Your snapshots and how to improve them  
In mailing prints, address to above department

**S**MALL patches of sunlight filtering through a screen or lattice invariably form an interesting pattern. But so often, as in the case of "Sunlight," below, the photographer fails to realize that the range of tones which can be reproduced in a photograph is limited. The sun's rays did not conceal the modeling and outline of the face as they do in the photograph. Color, perspective, and especially the great range of tones from black to brilliant reflected sunlight which are detected by the



**SUNLIGHT.** Kodak Bantam camera, Panatomic film,  $f/8$ ,  $1/100th$ .

human eye and which add to the modeling of a face, are not recorded by the camera. In order to make this picture successfully it would be necessary to decrease the contrast between the sunlit areas and the general tone value of the face. This might best be accomplished by the use of reflectors to bring the general illumination of the face nearer to the light intensity of the sunlight pattern. If such a reflector had been used in this picture it would be a well lit portrait with a slightly contrasting sunlight pattern superimposed.

The flowers in the girl's hand add nothing

to the picture and they detract from the sunlight design on the face. The hat, too, should look more natural instead of obviously being held in a position to cast a pattern over the face.

**B**ACKSTAGE is an interesting candid camera shot. It also illustrates the three reasons for fuzziness in a photograph. First there was a slight movement of the camera during the exposure which was made with the shutter set at  $1/10$  second while the camera was held in the hand. It is difficult to hold a camera rigid for any exposure under  $1/25$  of a second. It is possible with training, however, to make successful exposures at  $1/10$  and  $1/5$  second. To do this successfully the body should be braced, the feet firm on the ground, the camera steadied by holding it against the face or the body, and the breath held during the exposure.

The picture also shows signs of movement in the subject. Note the hands and head of the girl in the center. In candid work when it is necessary to use slow shutter speeds the only practical way to avoid this difficulty is to carefully observe the movements of the subjects and anticipate moments of absolute stillness when it is possible to make the picture.


The third and commonest cause of fuzzy images is due to faulty focusing. With modern range finders many photographers feel that

(Page 117, please)



**BACKSTAGE.** Robot camera, Agfa Finopan film,  $f/3.5$ ,  $1/10th$ .





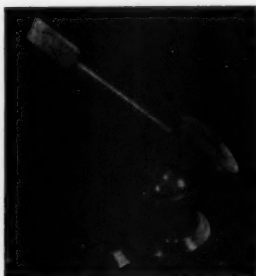
*Wollensak means Good Lenses!*

Photo by Charles J. Ewing, Commercial Photographer of Rochester, New York. Aside from his professional work, one of Mr. Ewing's hobbies is hunting wild life with a group of amateur minicam enthusiasts. To produce this unusual photograph, he enlarged a portion of the miniature negative shown at right (approximately 12 times) with a Wollensak 2-inch  $f4.5$  Enlarging Velostigmat.\* Mr. Ewing uses several Wollensak lenses in his professional work and has done so for many years.

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have stops to limit the spread of the legs, but a tripod with legs which can be set at any angle up to 90 degrees from the vertical is often preferable, since one tripod leg can then be placed over the shoulder or lie across a table when the photographer is in a tight spot.

The tripod head should be strong and flat on top. It should have sufficient area to support the camera properly without

putting all the load on the tripod screw. No part of the tripod should project above the level of the top. Try a camera on it and make sure it can be swung completely around without hitting any obstruction. Examine the camera screw. One adjustable type of screw extends four to eight inches below the head and is equipped with a convenient locking arrangement. It is instantly adaptable to deep or shallow camera sockets and can be operated easily.

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## Being Critical

(Continued from page 114)

they need only set the camera within the range of the principal subject and click the shutter. This may work at times. In this case it did not. One of the important elements, the girl in the foreground, is entirely out of focus. When deciding the point on which to focus, one should determine the point nearest the camera which should be sharp and then, estimating the approximate depth from this point, set the camera for the mid point of the field. Actually it is better in practice to focus nearer the front of the subject, for sharpness here is much more important than in the background.

## Ten Do's and Don'ts

(Continued from page 20)

close they burn up the subject and flatten out the final result. Direct the exact center of light emanating from your spot slightly toward the background, so that only the edge of the angle of light illuminates the face. At the proper distance a spotlight will give marvelous results. What is the proper distance? It depends on the subject because of the differences in skin textures and variations in their light-absorbing quality.

6. *Don't* let the color on the ground glass fool you. Learn to think in black and white. A certain young actress that I know is greatly admired for her freshness and beauty. The texture and coloring of her skin is that of a child. Her figure is also marvelous, but—the bone structure of her face is not photogenic. The shape of her head is also poor. Her wonderful skin and lovely figure make you forget that the eyes are too small and the face too full. Squint your eyes down to about  $\frac{1}{22}$  when looking at the sitter and try to visualize the monochromatic (one-color) result on the final print.

7. *Don't* always use the plain black or white background with the conventional cast shadow on the subject adding a distracting note to the picture. Break up your backgrounds, for example, by using the shadow of a vase of flowers cast on the background.

8. *Don't* distort the normal bone con-

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struction of the face. By the careful use of back and side lights you can emphasize the face's modeling and accentuate the planes of the head.

9. *Don't* face the shoulders of your subject directly toward the camera. Avoid having the shoulders level with the base of the picture. Square shoulders give a placid, inartistic, static quality to a portrait.

Cut the straight line of the shoulders by turning the torso a bit to right or left. Sometimes it is effective to slightly drop one of the shoulders a little. This imparts a feeling of movement to the position of the sitter.

10. *Don't* press the shutter if the picture in the view-finder or ground glass appears lifeless. A good photograph must have a certain feeling of rhythm. It should look like an arrested moment of movement. We should always get the feeling that the

sitter is giving us some definite expression and not just placidly sitting there, getting an unpleasant moment over with as quickly as possible.

Arrange your lights until the features of the sitter spring to life with a third dimensional, or *standing out*, quality in the view-finder.

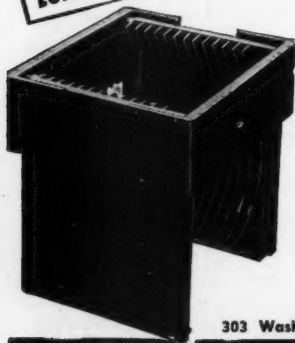
Bruno uses conventional studio equipment including an 8x10 inch view camera. The lens is a Bausch & Lomb Tessar with a focal length of 19 inches. This is a little above normal, permitting the camera to be further from the subject. It is about equal to the use of a lens of 3-inch (instead of 2-inch) focal length on a 35mm. camera.

The film used for all of the illustrations shown here is Defender X-F cut film. Exposure was 1/2 second at f8 or f11, depending on the amount of light. Prints were made on Defender Velour Black.

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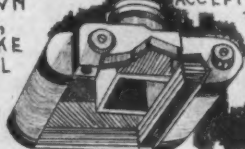
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By HIRSON

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THROUGH THE  
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EACH CARRYING  
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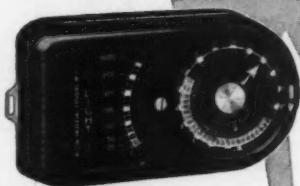
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## How To FIND Good Pictures

(Continued from page 17)

agility over the keys? Remember the day baby Peter was caught thumping the keys with his sticky little hands? Hundreds of other events happened at that piano that you can recreate with the same, or other, models.

How about the fireplace? Remember the day you roasted marshmallows for Johnny when he was just a tot? Remember the ghost stories Uncle Henry used to tell around the glowing fire? Remember how you used to hate to clean out the ashes from the fireplace? Haven't you often wished that you could capture the beautiful form of a dancing flame? Here again there are countless possibilities for new and fresh pictures.

Over there in the corner is a desk. Think of the joys and the sorrows that have been shared there with others in letters. Think of how young Peter studied his first lessons there and hung his tongue out of the corner of his mouth as he strove

to master the intricacies of writing. Think, too, of how tenderly Granny's hands handled a pen as she wrote to her children. And think of the fear that gripped you when you read the dime novels as you hunched over that same desk. Think of the many other things that happened at that desk. Then try to recapture them with your camera so that others will get the same enjoyment from the pictures that you get out of the original incidents.

Now let us consider the large chair. It was here that Johnny ate when he had a sore throat and was not allowed to play outside. Here, too, Father used to sit and smoke his pipe and read the newspaper. Here Granny used to knit and tell stories to the young ones. Here Mother relaxed from the day's work and often held the babies when they were ill.

We could go on and on. But the important thing is that in one room we have discovered many picture possibilities. And to begin with, we have stressed only the "story" type of picture. We have not con-

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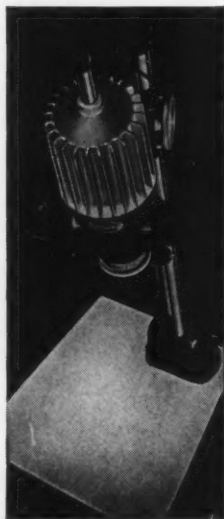
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sidered the possibilities of "still-life" compositions and the "patterns" of lights and shadows.

In the same manner one can analyze the other rooms of the house and find countless pictures. Remember how you were always affected by the reverence of a bowed head saying Grace? Remember how intrigued you were by the pattern made by the whirling mixer in a bowl of cake batter? Remember the form of water as it tumbles out of a faucet? You can go on and on thinking of possibilities within the home. Before you stop you can have a list of a hundred, or more, pictures that you can try to create during the coming winter months.

Now let us step outside and see what we might expect to find there. The numerous activities associated with maintaining a home offer a good place to begin our list of picture opportunities. To mention just a few, let us begin with clearing snow from the sidewalk, digging a garden, planting seeds, pruning trees and

bushes, mowing the lawn, watering lawn and flowers, cutting flowers, weeding the vegetable garden, painting the house, putting up screens, climbing a ladder . . . but we could go on for pages and still not exhaust the subject.

With a closeup attachment you can photograph the insect life in your own backyard. There is the drama of concentrated activity in every anthill and the beetles that scurry about when a board is overturned. Search each piece of earth and you will get a glimpse of a phase of living unknown except to the initiated.

Now let us expand into the neighborhood and see what additional subjects we might find. Man lives not only alone, but also in social groups. Within these groups he finds the security and the kind of happiness that he cannot find alone at his fireside.

In his quest of the unknown and unfathomable he turns to his church. Here one can find numerous opportunities for pictures especially in portraying the vari-



M. L. Cohen

*Daylight  
Loading*

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## How To FIND Good Pictures

(Continued from page 17)

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ous activities of the church organizations. In a ritualistic church there are added possibilities to test the most experienced.

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are sincere in your interest in making a picture record.

Not only can a picture record of a city provide an excellent guide for photographic interest and activity, but it can also prove of considerable benefit to historians, writers and civic-minded people. While numerous pictures are made in a haphazard way, few cities have a methodically made collection of good photographs. Camera clubs will find such an activity of considerable benefit for themselves and for their cities.

While these comments have been directed mainly at the city dweller, they apply equally to the photographer who resides on a farm. The farmer has as many different picture opportunities as his city cousin, although different, of course.

We could go on and on, examining picture possibilities. When we would be through we would have an excellent catalogue. However, such a procedure would be of little avail by itself.

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The important thing is to see everything as though you are seeing it for the first time. Look closely and analyze thoroughly. Take any part of your home, or yard, and see how many good pictures you can get in a day.

But do not shoot haphazardly, hoping to obtain a few good negatives. No masterpiece was ever created by accident. Look long and carefully and thoughtfully before you yield to the desire to press the button.

And gradually you will begin to see pictures where you had passed them by continually. You will find yourself seeking, seeking, seeking.

Suddenly you will discover that in the process of seeking pictures you have become more observing, more attentive to the simple beauties that make life richer and more worth the living. Yes, you will even discover that the camera can lead the way to the pleasures of greater self-realization.

*Editor's Note:*

*This is the first of a series of articles by Leo*

*Nejelski. Next month in, "How you can learn to take better pictures," he will describe a routine for progressing from simple pictures to better and more complex ones.*

*An amateur photographer himself, one just "rising from the ranks," Leo Nejelski is especially well-fitted to talk about pictures and to tell us how to get better results with our cameras.*

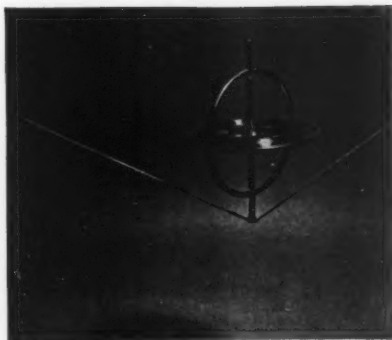
*His experience started as a boy when he chanced to photograph the smoking ruins of a church after a disastrous fire. Post-*

*cards of it sold to the grieving parishioners at 25 cents each. This led him to making post cards of all the churches in the neighborhood. With the proceeds, he bought a Graflex and then really started.*

*Taking pictures remained a hobby, however, secondary to his job in an advertising*



## How to Make *unusual* Pictures—



**W**HY not lift yourself out of the commonplace, this winter, and start making *unusual* pictures?

A whirling subject like this gyroscope, that crowds high-speed motion into small space under poor light, would be just so much wasted film to most amateur photographers. But to A. W. Ambler, it became a unique, prize-winning picture, because he *controlled his own lighting* with a Kalart Micromatic Speed Flash. He could concentrate on composition, use the full speed of his shutter—and so can you, when you equip your camera with a Micromatic. Ask your dealer to show you the light-weight, compact Kalart model engineered to match *your shutter*. For free 40-page Speed Flash Manual, just drop a postcard to The Kalart Company Inc., Dept. M-11, 915 Broadway, New York.

1/500 sec.  
at 1/11.



Kalart "Micromatic" Synchronizer stays accurate, whether your battery is fresh or 4 mos. old. Attaches easily as a cable release. Complete, only .... **\$13.50**

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*Micromatic*  
**SPEED FLASH**

(Made entirely in U. S. A.)



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Wrap a dollar bill around any 36-exposure roll of film and send it to us for a particularly good job of fine grain processing, with each good negative enlarged by craftsmen to approximately 3x4. Send an extra 50c (coin) for double weight mat paper and SPECIAL VAPORATING SERVICE, which permanently protects developed film from finger marks, water stains, scratches, etc. 35mm. developed and contact strip prints 18 size, 40c. 36. 50c (see before enlarged). There's forty years of satisfaction behind Moen-Tone Service.

MOEN PHOTO SERVICE, 100 Moen Bldg., La Crosse, Wis.

## 35MM POSITIVE FILM STRIPS

1 strip 36 exposures 35c  
3 rolls \$1.00; 4 rolls \$1.75

At last! Your 35mm. film strips can be printed on positive film for projection from the strip or may be used for making 2"x2" slides. Each strip is printed by our professional moving picture printers. Your negative will be returned with the positive strip.

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"Send for free mailing bag"

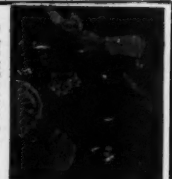
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are the chances of gamblers! Yet fussy and discriminating amateurs take no chances if they have their fine grain developing, printing and enlarging done at

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agency. Promotions came his way until at the age of 32, he became advertising manager of Swift and Company, heading a department of about 90 people with 38 budgets to administer, covering every known advertising medium from newspapers, magazines, radio, outdoor and direct mail to building and being responsible for the big Swift exhibit at the Chicago Century of Progress, and now at the New York World's Fair.

## In a Developing Tray

(Continued from page 33)

builds up density. Hydroquinone gives detail only after considerable density has been obtained. Together they make a well-balanced developer—the Hydroquinone gives the contrast and the Metol the detail.

Sodium Carbonate is added to the developer to speed up its action. Sodium Sulphite prevents the developing solution from wasting itself by taking up Oxygen from the air. Increasing the amount of Sulphite makes the developer keep better.

The activity of the developer is retarded by the addition of Potassium Bromide which is a restrainer. In small amounts it prevents the developer from attacking unexposed crystals of Silver Bromide. As a result, clearer prints are obtained.

After development is complete, the print is put into a short-stop bath of dilute acetic acid, to neutralize the alkaline Sodium Carbonate and stops the action of the developer.

The print is then placed in the Hypo solution (Sodium Thiosulphate). This removes the light-sensitive silver salts which have not been used in forming the image. To Hypo are added Acetic Acid (stops development), Alum which hardens the gelatin so that it will not soften during washing and drying, and a preservative such as Sodium Sulphite. This prevents the developer which is carried over into the fixing bath from turning brown or causing stains and the acid from destroying the Hypo.

Prints are left in the fixing solution for about fifteen minutes after which they are washed in running water for an hour. The water washes out all the chemicals from the paper stock and emulsion, preventing stains that would otherwise occur later from chemical action with light and air. Adequately fixed and washed, photographs will last as long as the paper they are printed on.

There are many developers in common use and many types of emulsions. The fundamental process of development, however, is the same regardless of the material employed or whether the result is a negative or a print.



## "Double Exposure" Portraits

(Continued from page 30)

making the actual exposures, and the masking and overlapping steps carefully done, success will result. If not, try it all over again. Care and patience with the preliminary steps are essential, bringing their reward in a job well done the first time.

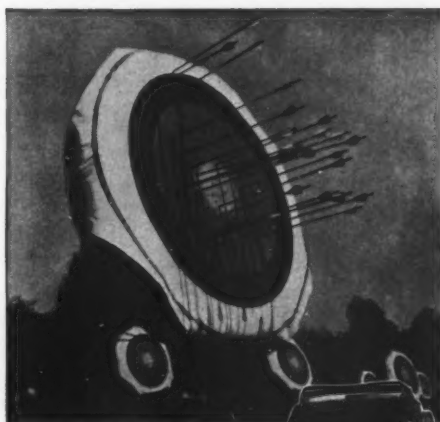


THE ARGUS JIG-O-MAT (above) is a new masking easel that greatly facilitates the making of montage portraits.

Follow the usual composition rules, with all images facing into the picture. Do not attempt to include too many negatives in a single montage. Three or four, rarely more, should be enough to obtain results that will amaze and delight your subjects.



"Maybe I was in there a long time—but I got some swell shots."



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The 2 1/4 x 3 1/4 fitted to take the lens and lensboard of the Miniature Speed Graphic. No separate flange, etc., necessary.

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With 3" f 4.5 Wollensak Velostigmat. Same as 2 1/4 x 3 1/4, but with 24" upright; 4 1/4" diameter condensers to enlarge full rest pocket (1 1/2" x 2 1/4"); half No. 120 or 2 1/4 x 2 1/4" negatives. Without lens, \$21.00. With KODAK REFLEX flange or NATIONAL GRAPHLEX mount, \$22.50. 30"x24" baseboard, \$1.25; 48" upright in place of 24", \$1.50 extra; opal bulb, 50c extra.

Order Now: All Prices Are Postpaid, subject to return within ten days and money cheerfully refunded. All Min Langers have first quality double condensers; micro focusing screw mount, 1/2" movement per turn; high-low light control and foot switch. All lenses supplied have iris diaphragm. Circular on request.

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# CAMERA TERMINOLOGY

**ADAPTER.** Any device used to connect two objects of different size or shape. Thus a *lens adapter* is a device placed on the camera lens board so that varying sizes of lens may be interchangeably used. It is constructed like an oversize iris diaphragm, the leaves opening and closing to grip the various size lens barrels. A *roll film adapter* is a frame which adjusts over the back of a plate camera thereby permitting the use of ordinary roll film instead of cut film or plates. A *film pack adapter* similarly serves to permit the use of film packs, which see.

**ANASTIGMAT.** A lens free of astigmatism, that is, one able to focus all horizontal and vertical lines uniformly sharp and uniformly bright. The flaw of astigmatism found in poorly corrected lenses (not anastigmats) causes blurred or overlapping lines on the film.

**APERTURE.** The opening whereby light is admitted to the camera to form an image on film. Some low price cameras have *fixed aperture*, the amount of light to be admitted being set by the manufacturer and not subject to the photographer's control. In most cameras the *working aperture* is controlled by the **IRIS DIAPHRAGM**, movable interlocking leaves which control the *aperture area*. The working aperture is also spoken of as the *effective aperture*, the area of the opening through which light may pass.

**BACK.** The rear plate or frame of a camera. In small hand cameras it is the pressure plate which holds the film in place. In single plate cameras the back is the focusing back, a frame into which a piece of ground glass has been set and on which the image is focused and into which the plate in its holder is inserted. In larger cameras there are many types of specialized backs as the *repeating* or *sliding back* which automatically moves or slides the exposed negative out of the way and moves a second into position. This type of back is used in color photography to make two or three exposures in rapid succession. Larger cameras of the plate type also provide a number of adjustments on backs, as the *reversible back* which permits turning the back the long way, thereby doing away with the necessity for turning the camera sidewise to get horizontal pictures. The *swinging back* is another such adjustment, thus permitting the back to swing on hinges so that it can be made at all times parallel with the subject even though

the camera body and lens are tilted. This adjustment is valuable when photographing tall buildings. It is also spoken of as a *tilting back*.

**BAG (CHANGING).** An accessory which permits daylight loading of plates or cut films. It is a black bag, available in many sizes, provided with hand-holes. Also known as a *loading bag*.

**BARREL.** The metal casing of a lens. In common usage it is generally the *focusing barrel*, a screw arrangement that permits the lens to be moved forward or back for the purpose of focusing. Also known as focusing **MOUNTS**. This arrangement is found most often on motion picture and miniature still cameras since these do not have any bellows or movable backs, whereby the distance between the film and the lens may be adjusted. *Barrel marks* or *markings* are the engraved data on a lens barrel such as the lens focal length, *f*-marking, lens type, etc.

**BED.** The bottom of a camera or the rack on which it moves in the case of large hand focusing cameras.

**BELLOWS.** An accordian type, light-tight casing between the back of the camera and the lens, which may be extended or contracted to vary the distance from the lens to the negative, thereby achieving proper focus. The limit of the ability to focus on very close objects is determined by the length of the bellows *extension*. Certain bellows type cameras are therefore equipped with *double* or *triple extension* bellows, thereby permitting the lens to be racked out to a great enough distance from the film to focus small objects only a few inches away.

**BELLOWS DRESSING.** A liquid applied to old bellows to prevent cracking.

**BULB.** A type of shutter release found on old style cameras or with very large studio cameras. This bulb forces air under compression to the shutter and thereby momentarily opens the diaphragm leaves of the shutter.

**CABINET CAMERA.** Automatic cameras of the Photomat type for coin operation. The name derives from the closet or cabinet-like structure in which the subject is posed.

**CABLE RELEASE.** A wire device for tripping the camera shutter. The wire moves inside a cloth sheath. The functions of the cable release are to permit release of the shutter while the operator is at a distance from

\* CAPITALIZED words are cross references defined alphabetically.

## SEE THESE PHOTO EXHIBITS THIS MONTH

City	Street Address	Dates Open	Name of Exhibition
Gary, Ind.	Central Public Library	Nov. 1 to 30	Exhibit from Camera Club of New York City
Gary, Ind.	Gary Works Camera Club, Carnegie-III. Steel Corp.	Nov. 16 to 21	Exhibit from Harrisburg Camera Club, Harrisburg, Pa.
Glendale, Calif.	Casa Adobe, 1340 Dorothy Drive	Dec. 1 to 3	Second Annual Southern California Salon
New York City	The Camera Club, 121 West 68th St.	Oct. 29 to Nov. 30; 10 a. m. to 10 p. m.	New York Salon of Photography
Philadelphia, Pa.	Free Library of Phila., Logan Square	Nov. 11 to 26; 10 a. m. to 10 p. m., Sundays 2 to 10 p. m.	Fifth Annual Philadelphia Salon of the Miniature Camera
Providence, R. I.	103 Westminster	Nov. 19 to 25, 7 to 10 p. m.	Third Rhode Island National Salon
Rockford, Ill.	Harry and Della Burpee Art Gallery	Nov. 5 to 18	Tenth Annual Salon, Rockford Art Association



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8mm. B&H Model 134 E, F2.5 Anastigmat	40.00
8mm. B&H Companion, F3.5 Anastigmat..	37.50
16mm. B&H Model 70DA, F1.5 Cooke.....	165.00
16mm. B&H Model 70DA, F1.5 Cooke.....	149.50
16mm. Kodak Magazine, F1.9 Anastigmat.	84.50
16mm. Bolex H-16, Leica Hektor F1.5....	210.00
16mm. Keystone A7, 7 speeds, Anast. F2.7	32.50
16mm. Keystone A7, 7 speeds, Anast. F1.5	50.00
8mm. Kodak Model 50, 300 Watts.....	39.50
8mm. Bell & Howell Model 122, 500 Watts	88.50
8mm. Keystone RS, 500 Watts.....	39.50
8mm. Keystone MS, 300 Watts.....	29.50
16mm. Kodak Model G, 750 Watts, F1.6....	98.50
16mm. B&H Model Diplomat, case, 750 w.	149.50
16mm. Keystone A81, 750 Watts, F1.6....	82.50
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Contax I, Sonnar F2, ev. case.....	89.50
Contax II, Sonnar F2, ev. case.....	149.50
Contax III, Sonnar F2, ev. case.....	164.50
Contax III, Sonnar F1.5, ev. case.....	176.50
Kine Exakta, Carl Zeiss Tessar F2.8.....	134.50
Kine Exakta, Carl Zeiss Biotar F2.0.....	198.00
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## SALONS TO ENTER

Closing Date	Name of Salon	Number of Prints and Entry Fee		For Entry Blank, Write to
November 30	Springfield Salon of Photographic Art	4	\$1.00	John Funaro, Director, Springfield Salon, 110 Rochelle St., Springfield, Mass.
December 1	23rd Annual International Salon, Los Angeles Camera Pictorialists	4	\$1.00	Larry Lewin, Secretary, Los Angeles Museum, Exposition Park, Los Angeles, Calif.
December 6	Second Annual Springfield International Salon	4	\$1.00	Salon Secretary, Springfield International Salon, George Walter Vincent Smith Art Gallery, Springfield, Mass.
December 6	Second Western Pennsylvania Salon	4	\$1.00	W. C. Munhall, Greater Pittsburgh Photographic Society, Inc., 210 E. Park Way, N. S. Pittsburgh, Pa.
December 12	Third Southern Salon (Second International)	4	\$1.00	H. W. Newsome, Chairman Salon Committee, Norfolk Photographic Club, Museum, of Arts and Sciences, Norfolk, Va.
December 14	Fifth Rochester International Salon	4 monotone prints, 8 color prints, 6 natural color transparencies—\$1.00		John McMaster, Memorial Art Gallery, Rochester, N. Y.
December 15	Fifth Des Moines International Salon	4	\$1.00	Walter Vittum, Salon Director, Y. M. C. A., Des Moines, Iowa
December 31	First Annual Boston International Salon of Nature Photography	10 (five \$1.00 classifications)		Bradford Washburn, Chairman Salon Committee, International Salon of Nature Photography, 234 Berkeley St., Boston, Mass.
January 6	Annual National Salon, Yonkers Camera Club	4	\$1.00	National Salon Committee, c/o Hubert L. Swapp, Chairman, U. M. C. A., Yonkers, N. Y.
January 12	Seventh National Collegiate Salon of Pictorial Photog.	4	\$1.00	Jerome Salzman, Salon Chairman, U. of Wisconsin Camera Club, Memorial Union, Madison, Wis.
January 12	Seventh Wilmington International Salon	4	\$1.00	Miss Muriel E. Place, Secretary, Delaware Camera Club, P. O. Box 981, Wilmington, Del.
January 23	Fourth Virginia Photographic Salon (Open only to persons born or now living in Virginia)	No limit; 25 cents per print, \$1.00 minimum		Miss Maria D. Powell, Secretary, Salon Committee, 1714 Park Ave., Richmond, Virginia.

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Automatic Roliflex 8x8cm	182.50	17.50	16.00
Recomar 33	63.00	7.00	7.00
Korelle Reflex I, Cassar f3.5 lens	70.00	7.00	8.00
Perflex 44, f2.8 lens	47.50	9.00	5.00
Bell & Howell Filmo 141-A, 18mm	115.00	12.00	13.00
Cine Kodak Eight Model 80	67.50	7.00	8.00

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Recomar 33	39.50	4.00	5.00
Corte Dallina II, Radionar f2.9 lens	39.50	4.00	5.00
Kodak Bantam Special, Ekatar f2 and case	69.50	7.00	8.00
Korelle Reflex Model I, Victor f3.5	49.50	5.00	6.00

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the camera or, with shorter cables, to eliminate the risk of jarring the camera.

**CAMERA.** The complete instrument for taking photographs, consisting of a light-tight box, one end of which holds the film or other sensitive material while the other contains the lens and shutter assembly. The camera *box* or *body* is the light-tight box with its film holding mechanism, but without lens or shutter. A *box* camera consists of a non-collapsible box with a fixed or semi-fixed focus lens. Other types of cameras for special purposes are the *clinical* camera provided with special stand and other devices for close-up photography in surgery; the *copying* camera intended for photographing drawings, printed matter or for copying photographs in enlarged or reduced size. *Field* or *studio* cameras must be used on a pedestal or stand as opposed to *hand* cameras which require no support.

**CAMERA OBSCURA.** Any camera with a screen for receiving the image from the lens.

**CAP (LENS).** A lined metal disc for covering the lens.

**COPYING STAND.** A table or rack arrangement for a copying camera, generally also equipped with an upright copying board for holding the picture or drawing to be photographed.

**CURTAIN.** Also known as *blind* or *roller-blind*, an opaque fabric or interlocking metal rods used as the moving part in a roller-blind or **FOCAL PLANE SHUTTER**. The curtain *aperture* is the fixed or varied slit in the curtain.

**DARK SLIDE.** Or *slide*, a panel moving on grooves in a **FILM HOLDER**. The panel serves to make the holder light-tight and is slid out after the holder has been placed in the camera and before the exposure is made.

**DAYLIGHT SPOOL.** A film roll which is protected by a paper strip or **LEADER** so that the film may be loaded into the camera by daylight.

**DELAYED ACTION.** A shutter adjustment which will trip the shutter anywhere from 10 to 30 seconds after it has been set in motion, thereby permitting the photographer to include himself in a picture.

**DOUBLE EXPOSURE.** Two or more pictures taken on a single film, either accidentally or by design for various trick effects.

**DRY PLATE.** Formerly collodion sensitized plates, now any film plate as opposed to roll or cut film.

**EFFECTIVE SHUTTER SPEED.** The actual working speed of a shutter as determined by test.

**EXTENSION.** The distance from the front of a camera to the back when the bellows are fully extended. An *extension adapter* is a sup-

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plementary bellows attached to the back of camera either for the purpose of accomodating a larger film size or to permit extremely close-up work. Extension tubes are used with cameras not provided with bellows for the purpose of permitting close-up work. One end of the tube screws into the camera body and the other holds the lens. The effect is similar to double or triple extension bellows.

**F-NUMBER.** The number used as an index of lens speed.

**FAIRCHILD CAMERA.** A heavy, electrically operated aerial camera.

**FILM HOLDER.** A wooden or metal flat container for cut film. A film magazine is a tube for holding roll film.

**FILM PACK.** A container for holding 12 cut film exposures so arranged as to permit daylight loading and unloading.

**FILTER (OPTICAL).** A piece of glass or other light-filtering medium used to hold back light of a specified color while passing light of other colors.

**FINDER (VIEW).** Any one of a number of devices which show the scene viewed by the lens and the extent of the lens **ANGLE OF VIEW**. (See p. 56.)

**FINDER (RANGE).** An optical device intended to determine the distance from the camera to the subject to be photographed. Many types are available, most of them making use of the principle whereby two separate images seen from different positions are made to coincide. The separation of the two positions is the finder base. In many modern miniature cameras the range finder is coupled with the lens for automatic focusing. Separate range finders also may be purchased.

**FOCAL PLANE.** The plane occupied by the film in a camera. The focal plane may be fixed, as in hand cameras where focus is achieved by screw revolving of the lens, or may be movable on a rack, as in larger bellows type and studio view cameras.

**FOCAL PLANE SHUTTER.** A roller-blind type of shutter devised so that the slit which passes before the opening is variable as well as the speed of travel thereby permitting very high net shutter speeds, as high as 1/1500th second being possible. See **SHUTTERS**.

**FOCUSING MOUNT.** See **BARREL**.

**FOCUSING SCALE.** A scale placed on the bed of a camera and notched at various points to show where the front of the camera must be extended in order to achieve proper focus at varying distances.

**FOOTAGE DIAL.** On motion picture cameras, a dial which shows the number of feet of film exposed.

\* CAPITALIZED words are cross references defined alphabetically.



**GOVERNOR.** On motion picture cameras, a device to regulate the number of frames per second passing before the shutter.

**GROUNDGLASS.** A glass viewing screen whose surface has been roughened with emery.

**HOLDER.** The frame container for cut film or film packs. Cut film holders may be *single* or *double*, that is holding one sheet of film only, or two.



**IRIS DIAPHRAGM.** A device for adjusting the size of the *aperture* or *stop* by means of a circle of thin flat tongues of metal fastened to a ring. The diaphragm usually operates between the front and rear lens components.

**IMAGE.** The counterpart of an object produced by reflected or refracted light. A photographic image is a *real* image, produced by converging light rays collected by a lens as against a *virtual* image produced by the prolongation of bent rays as in a mirror.

**INFINITY.** In photographic terminology, a point so distant that light rays from it are practically parallel. The infinity point varies with lenses and is designated on the lens mount as the symbol.

**INSTANTANEOUS EXPOSURE.** A loose term by which is generally meant any shutter speed faster than **TIME** or **BULB** exposure and which is automatically provided by the shutter, usually 1/25th of a second or faster.

**KODAK.** A trademark name used to designate cameras made by the Eastman Kodak Company.

**LEADER.** The paper wrapping of roll film to permit daylight loading or, in 35 mm. film, the shaped blank film at the beginning of the roll.

**LENS.** An arrangement of one or more pieces of optical glass for the purpose of converging light rays to form a photographic image. A *lens board* is a piece of wood which has been provided with a flange to receive the lens in its mount.

**LENS HOOD.** Also *lens shade*, a black lined hood placed over the lens and serving to cut off stray light from random directions, thereby preventing fog or flare.

**LENS TURRET.** On motion picture cameras, a mounting of several lens on a revolving turntable so that lenses of varying focal length may be quickly interchanged.



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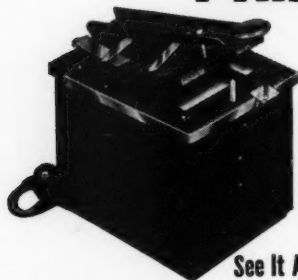
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MAGAZINE. Any container for roll film intended for insertion in the camera.

**MASK.** A device whereby part of a film may be shielded while a picture is taken on the remaining portion. The mask may then be moved to the opposite side and another picture taken on the remaining portion of the film. In some miniature cameras taking larger film sizes, a masking device is provided whereby the picture area per exposure is cut down so that a greater number of exposures may be taken on the roll.

**MULTIPLYING BACK.** A special back for passport, license and similar pictures, permitting the taking of a number of individual exposures on one piece of film.

**ONE-SHOT CAMERA.** For color photography, a camera which simultaneously exposes two or three negatives through appropriate colored filters.

**PANORAMIC CAMERA.** A roll film camera mounted to rotate on a special tripod head thereby permitting successive exposures to create one picture covering a very wide field.

**PANORAMIC HEAD.** A tripod head which may be rotated through a 360° arc, so that successive negatives may be matched up to produce pictures somewhat similar to those of the panoramic camera.

**PARALLAX.** The error introduced in focusing because of the different positions of the viewfinder and the lens. It is unimportant at distances greater than about 8 feet but requires compensation at closer distances. In the better miniature cameras parallax adjustments are provided.

**PINHOLES.** In cameras, minute holes in the bellows which admit light and cause film fog. Such holes may be tested for by placing a weak lighted bulb inside the bellows and noting the points at which light shows through the bellows.

**PLATES.** Sensitized sheets of glass as opposed to flexible film.

**PORTRAIT ATTACHMENT.** A supplementary lens whose action is to shorten the focal length of the lens thereby permitting focusing on nearby objects, as for close-up work in portraiture.

**PORTRAIT CAMERA.** Any camera which facilitates portrait photography, but generally used to describe a **VIEW CAMERA** taking 5 x 7 inch or larger cut film.

**RANGE FINDER.** See **FINDER**.

**RUBY FABRIC.** A piece of opaque fabric to be pasted over the film counter window when using panchromatic film which is sensitive to light of all colors. The ruby window of certain hand cameras is an opening covered with red celluloid or other composition through which the numbers on the film may be read.

**SHUTTER**—Any mechanical device whereby light is admitted into the camera for a determined interval of time. These are further identified as *instantaneous* shutters as against *hand* or *bulb* shutters which require timing or estimation of exposure by the operator. Instantaneous shutters are of four general types: before-lens shutters; between-lens shutters; behind-lens shutters; focal plane shutters. Most modern hand cameras are equipped with between-lens shutters of which the Compur shutter is an example. These are also known as *diaphragmatic* shutters from the diaphragm arrangement of metal leaves used to admit light. Focal plane shutters are set next to the film, hence in the focal plane. The slit is variable as well as the speed of the curtain. See also **CURTAIN, FOCAL PLANE**.

**STEREOSCOPIC CAMERA**. A camera equipped with two lenses which makes simultaneous negatives from slightly differing positions, about 2½ inches apart. When these are printed and viewed through a stereopticon the effect is that of a three dimensional picture.

**SWING FRONT**—A tilting arrangement for the front of view cameras whereby the lens may be kept in the same plane as the subject without tilting the camera. See **BACK**.

**TIME EXPOSURE**—A setting which permits the shutter to remain open for an exposure longer than is provided by any of the shutter's instantaneous speeds.

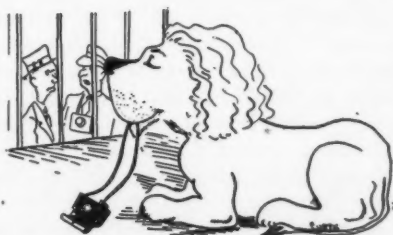
**TRIPOD**—Specifically a three-legged stand for cameras, but occasionally used to designate any type of camera stand or support.

**VIEW CAMERA**—Any camera provided with a ground glass back for focusing the image, but generally accepted as a large camera of this type.

**VIEW FINDER**—See **FINDER**.

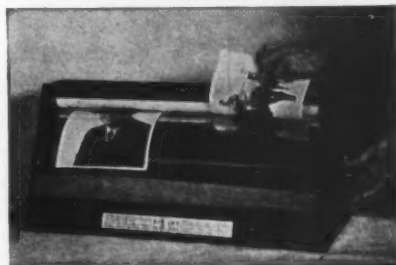
**WINDER**—A device for transporting film after the exposure has been made in the case of roll film. In modern miniature cameras the winder is generally coordinated with the shutter to prevent double exposure.

\* **CAPITALIZED** words are cross references defined alphabetically.



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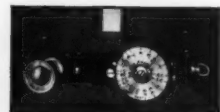
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## Inside Your Enlarger

(Continued from page 27)

be copied. This is focused sharply, the enlarger lamp is turned off, the negative taken out, and the film holder inserted. A shutter usually is not required for controlling the exposure. The work is done in a darkroom, and the lamps illuminating the subject are turned on and off to give the required timing.

**Gradation Transformer.** This auxiliary device enables the contrast to be varied to such an extent that no more than one grade of paper need be kept normally on hand. This "gradation transformer" consists of a holder, placed just below the lamp and above the condenser, into which can be inserted various discs. An opaque disc with a hole in the center increases the effective contrast of the negative. A glass disc with a frosted spot in the center tends to decrease the contrast and improve detail in the highlights without making the shadows too black. This attachment is available for Raja enlargers.

**Vertical vs. Horizontal.** The foregoing remarks were made with vertical enlargers in mind. That is, enlargers having the lens, negative and lamp arranged one above the other. Such machines require a minimum of table space and are considered easier to use than horizontal types in which the light travels in a right-or-left direction. Most of the earlier enlargers were horizontal, and that type is still found in commercial plants where very large negatives are projected or where there is not headroom enough for vertical enlargers. Some modern enlargers can be used either way.

**Adjustment.** Focusing: With ordinary enlargers using diffused illumination, two movements are necessary to form a sharp image of the desired size. First, the distance between lens and easel must be regulated and, second, the distance between lens and films. These operations soon become automatic. Auto-focus enlargers have gears or cams arranged so the image

always is in sharp focus, no matter how the distance between lens and paper is varied. Thus only one adjustment need be made manually.

**Stopping down:** The use of the lens diaphragm already has been mentioned. Usually, focusing is done at widest aperture, and then the diaphragm is closed down as desired. Lenses designed for enlarger use usually have diaphragm controls that are set by audible clicks, so they can be adjusted in the dark.

**Correcting perspective:** When you point an ordinary camera upward and shoot a tall building, the resulting picture is likely to show the building as if it were falling over backwards. This is an example of distorted perspective. Negatives of that type will produce correct-perspective prints if the enlarger has sufficient adjustments. Simply inclining the paper with respect to the negative will prove a partial remedy by straightening vertical lines, but there still is some loss of height. For correct perspective, the negative must be tilted with respect to the lens, and the paper also tilted a proportionate degree the other way. The more advanced enlargers have adjustments that permit this to be done. When only the paper or the negative is tilted, the lens must be stopped down considerably to make the picture sharp all over. When both paper and negative are tilted properly, little or no stopping down is required. This tilting manipulation can be used also to produce caricatures of portraits and other subjects.

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## Synchro-Sunlight Shot



This Superflash photo by Harry Mayo, of the Toledo Blade, is typical of synchro-sunlight flash taken against the sun. This particular shot was taken with a Speed Graphic, one Wabash Superflash "Press 40" bulb to illuminate the foreground, and a Mendelsohn synchro-nizer. Exposure was 1/200th second, f22, no filter, Agfa Superpan Press film; distance was 14 feet.

## "Everybody's Hobby"



Camera fans can anticipate seeing the new Warner Bros. picture, "Everybody's Hobby," starring Henry O'Neill and Irene Rich. The story goes like this: Everybody in the family has a hobby except Father. Daughter collects phonograph records, the Son is a short wave radio fan, and Mother is a stamp collector, but



poor Father (the underdog) has no hobby. So finally someone tells Father that the best hobby is candid photography. And does Father go into it deep! He doesn't stop with a UniveX Mercury camera, but gets enlargers and complete darkroom equipment, and to cap the climax, due to a lucky accident, photographs the fire bug who started a bad forest fire and collects a \$2,000 reward!

### Helene Saunders Joins N. Y. I.

The New York Institute of Photography announces the addition of a new member to its staff, Helene Saunders, F.R.P.S.

Mrs. Saunders has exhibited in salons all over the world and is an Associate of the Oval Table Society. She is well known for her work in the field of pictorialism and is an authority on miniature photography and portraiture.

At the N. Y. I. studios, 10 West 33rd Street, New York City, an exhibit of black and white and color work, done by students and graduates, is always on display. The studios are open daily, Monday to Friday from 9:30 a. m. to 9 p. m. (except Wednesday evening). An illustrated booklet about N. Y. I. and its facilities for teaching all branches of photography, may be had upon request.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, ETC., of MINICAM Magazine, published monthly at Cincinnati, Ohio, for October 1, 1939. Required by the Act of Congress, August 24, 1912.

Publisher—Wilbert Rosenthal, Cincinnati, Ohio; Editor—Will Lane, Cincinnati, Ohio; Business Manager—A. M. Mathieu, Cincinnati, Ohio.

Owners—Automobile Digest Publishing Corp., Wilbert Rosenthal, L. A. Thelen, A. M. Mathieu, all of 22 East 12th Street, Cincinnati, Ohio.

There are no bondholders, mortgagees, or other security holders.

Sworn to and subscribed before me this 29th day of September, 1939.

(Signed) A. M. MATHIEU,

(Signed) A. M. SCHOENBERGER, Notary Public.  
Commission expires December 30, 1939.

## Book Reviews

**THE BOYS' BOOK OF PHOTOGRAPHY**, by Edwin Way Teale. 252 pages, 31 full page illustrations, 40 diagrams by the author. Indexed. E. P. Dutton and Co., Inc. Price \$2.00.

Although written in terms which any teenage youngster could understand, **THE BOYS' BOOK OF PHOTOGRAPHY** is so complete and thorough that it appeals to adults as well.

The simplified explanations and well-illustrated directions supply the reader with the proverbial royal road to photographic success.

**MODERN PHOTOGRAPHY: THE STUDIO ANNUAL OF CAMERA ART**, 1939-40, edited by C. G. Holme, 136 pages, 101 full page black and white illustrations, 8 full-page color reproductions. The Studio Publications, Inc., New York and London. Price \$3.50.

Eight full-color plates in addition to the excellent reproductions of the outstanding black and white pictures made during the past year make a "jubilee" number indeed of this ninth

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But MORE FUN to SHOW

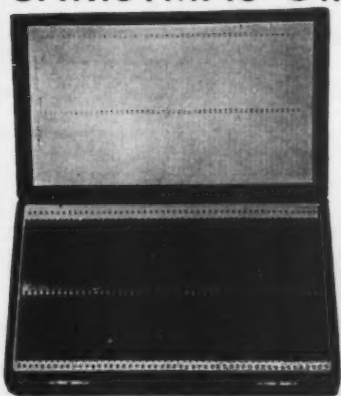
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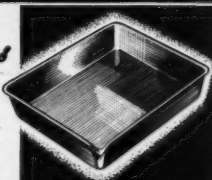
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**COLUMBIAN**  
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annual edition of MODERN PHOTOGRAPHY.

Mr. E. A. Robins, President of the Royal Photographic Society has written an interesting review of the progress of this newest of the arts. In line with this, the editor has written an article on "The New Photo-Journalism" which includes many little-known facts concerning the beginnings of this most modern of reportorial techniques and has published outstanding samples of the news photography of the past year.

## ADD COLOR TO ANY PICTURE

(Continued from page 51)

### Hypo Test

Potassium Permanganate	4 grains	0.3 grams
Sodium Hydroxide		
(Caustic Soda) .....	8 grains	0.6 grams
Distilled or rain water to make .....	8 ounces	250.0 cc

To test, take 4 ounces (125 cc.) of distilled or rain water and add 1/4 dram (1 cc.) of stock solution. Pour 1/2 ounce of the diluted solution into a small glass and allow the water from the print to drip into the solution. If the pink color clears or turns brown, additional washing is necessary.

*Sepia Toning.* The most frequently used means of achieving sepia tones is the Sulphiding method. Two solutions are required, as follows:

### Solution 1

Potassium Ferricyanide.....	1 1/2 ozs.
Potassium Bromide.....	1 1/2 ozs.
Water to make.....	32 ozs.

Use without dilution. This solution bleaches the black and white image. The print should remain in this bath until all the black has left the deepest shadows. Any traces of hypo in the print will combine with the Ferricyanide to form Farmer's Reducer, with the result that the image will completely disappear.

After bleaching, wash the print in running water for about ten minutes. Blueish spots on the print at this stage are due to the presence of iron in the water or tray. Use clean trays, preferably glass. If enamel trays are used, make sure that there are no chipped spots. After

washing, the print is ready for redevelopment in Solution 2.

#### Solution 2 (Stock Solution)

Sodium Sulphide (fused)..... 1½ ozs.  
Water to make..... 16 ozs.

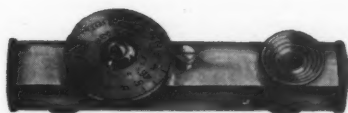
For use, take one part of the stock solution to eight parts of water. Note that Sodium Sulphide, not Sulphite, is specified. Redevelopment should be rapid, taking place in about one minute. After redevelopment, wash for about thirty minutes and dry.

After the print has been fixed and washed, dry it before toning. Use a hardening fixing bath to prevent blistering during subsequent handling. When toning keep all solutions at approximately the same temperature to lessen the hazard of blistering.

If the toner has left a sediment which shows in streaks or finger-marks on the print, rinse the print for a few seconds in a 3% solution of Acetic Acid. Blue iron spots on the print can be removed by wiping over them with cotton dipped in dilute Hydrochloric Acid. Remove the acid by washing. A deeper sepia tone can be had by soaking the print for two or three minutes in the sulphiding redeveloper prior to bleaching. Rinse in water and then proceed to tone in the described manner.

**Copper Toning.** Excellent effects are achieved with copper toning, a process that is both simple and inexpensive. Since the copper toner does not radically alter the strength of the print, extensive preliminary precautions are not necessary. Copper toning is continuous—that is, prolonged. Results achieved range from a rich black or brown, through pink to a final chalk red. The process may be halted at any desired stage. Two stock solutions are required, as follows:

Stock Solution 1*		
Copper Sulphate.....	60 grains	6.25 grams
Potassium Citrate (neutral) .....	240 grains	25.0 grams
Water to make.....	20 ozs.	1000.0 cc.



## New Bee Bee <sup>SUPERIMPOSED</sup> IMAGE TYPE RANGE FINDER

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Vol. 29. No. 11

NOVEMBER, 1939

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### Stock Solution 2

Potassium Ferricyanide	50 grains	5.2 grams
Potassium Citrate		
(neutral) . . . . .	240 grains	25.0 grams
Water to make. . . . .	20 ozs.	1000.0 cc.

For use, take equal parts of Solutions 1 and 2. If the print appears pink or purple in the highlights, increase the quantity of the Potassium Citrate in either solution. When the print has reached the desired tone, remove and wash thoroughly. While the color achieved by this method is permanent, an improved tone may be had by immersing the toned print in the following bath for about fifteen minutes:

Copper Sulphate. . . . .	154 grains	20 grams
Ammonium Chloride. . . . .	355 grains	50 grams
Hydrochloric Acid. . . . .	77 minims	10 cc.
Water to make. . . . .	16 ozs.	1000.0 cc.

This bath keeps well and may be used until exhausted. After immersion for fifteen minutes in this bath, the print should be fixed in a plain 5% hypo solution. If this bath is not used, the print need only be washed.

**Intensifying Blue Toner.** Iron is used to make an excellent blue toner which slightly intensifies the image. Prints intended for this toner should, therefore, be light. Weak black and white prints that might otherwise be discarded can often be turned into excellent pictures by means of this blue toner. Only one solution is required.

### Blue Toner

Ferric Ammonium Citrate		
(10% Solution) . . . . .	2 ozs.	10 cc.
Potassium Ferricyanide		
(10% Solution) . . . . .	2 ozs.	10 cc.
Acetic Acid (10% Solution) . . . . .	20 ozs.	1000 cc.

Use without dilution. Immerse the print in this solution until the desired tone has been reached, then wash well in running water until the highlights are entirely clear of color. It is important to remove all excess color by thorough washing, otherwise the intensifying action will continue to an undesirable degree. This method of toning yields a vivid blue color.

A blue toner, expensive to make, but more suitable for seascapes or snow scenes, utilizes Thiocarbamide and Gold Chloride. Three solutions are required, as follows:

Stock Solution 1	
Thiocarbamide .....	50 grains
Water .....	8 ozs.

Stock Solution 2	
Citric Acid.....	50 grains
Water .....	8 ozs.

Stock Solution 3	
Gold Chloride.....	15 grains
Water .....	8 ozs.

To use, mix 10 ounces of water with one ounce each of Solutions 1, 2 and 3. This should be enough to tone three or four 11 x 14-inch prints. The action of the toner is slow, requiring up to thirty minutes to produce the desired tone. It works best with chloride or chlorobromide papers. After mixing, the solution is unstable and cannot be kept, but the individual stock solutions will keep well if stored in brown bottles.

**Green Toner.** A toner in which Cobalt Chloride and Ferrous Sulphate are combined to form Cobalt Ferrocyanide yields a rich green. Two solutions are required, as follows:

Solution 1	
Potassium Bichromate.....	5 grains
Potassium Ferricyanide.....	25 grains
Water to make.....	2 ozs.

Solution 2	
Cobalt Chloride.....	20 grains
Ferrous Sulphate.....	5 grains
Hydrochloric Acid.....	20 minims
Water to make.....	2 ozs.

Immerse the print in Solution 1 for four or five minutes. The longer the print remains in this solution, the lighter will be the shade of green. Wash free of all stain and immerse the print in Solution 2. Toning requires thirty minutes or more to achieve the desired shade. When toning has been completed, wash the print in running water for about five minutes, fix for a minute or two in a plain hypo solution, and wash thoroughly.

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Successful print toning requires a clean working technique. Trays used in this work should be well scrubbed before and after. All traces of Sulphide may be removed from trays by rinsing them in water to which has been added some permanganate of potash. Trays that have been stained by bleaches can usually be cleared by scrubbing them with a solution of Sodium Bisulphite. This will also remove permanganate and other stains from finger-tips.

Some of the chemicals used in toning are poisonous and should be handled with care. This is equally true of the acids, which, if allowed to spill, may cause serious burns on the skin, clothing or furniture. Strong acids should always be stored in glass-stoppered bottles. When working with acids, pour off a small quantity and use this as required, rather than handle a bulky and unwieldy container.

Dig out some of your old prints or make some new ones. Add color to these black and whites and you will be adding a new dimension to your enjoyment of picture-taking.

## MAKE IDEA PICTURES IN COLOR

(Continued from page 41)

straction varies with the viewer and his reactions.

*Explicable* abstractions come with ready-made descriptions so that everyone may get the same reaction. For example, a picture of innocence may be created from the following symbols: White paper for *innocence*, a square for *honesty*, a circle for perfection, a vertical straight line for *dignity, strength and pride*, and a horizontal straight line for *peace and repose*. The result represents *innocence* in a detailed and LOGICALLY explicable manner, as in Fig. 6.

Fig. 6 represents innocence because the author feels it does. It is effective, however, only if the many readers *also feel* that it represents innocence.



There is nothing mysterious about abstract pictures, or even about how they are made. The article "No Camera Needed" by Samuel Grierson (MINICAM, Oct., p. 48) gave the technical details for making black and white photograms. No equipment is needed except a yellow safelight, a few sheets of sensitized paper and a dark place to work in.

The same general method is used to produce color photograms. For the simplest method, Dufaycolor or Kodachrome cut film is used and on this surface, shadows of opaque or transparent objects are cast.

Colored lights may be used. Or colored transparent objects and white light. The color film is developed as usual and printed by any printing process such as Defender Chromatone or Wash Off Relief.

Eliminating the use of color film and making photograms direct on separation negatives is a process still in the experimental stage, but the possibilities are tremendous.

Yet another method involves projecting colored images on a ground glass screen and photographing with Dufaycolor or Kodachrome.

The commercial possibilities of photograms in color are yet to be appreciated, yet alone exploited. Posters, magazine covers, photo murals and advertising-illustration all provide practical uses and juicy markets just waiting to be taken.



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# Photography TRADE NEWS

## Mansfield Color Toners

New single-solution color toners (32 oz., \$1.25) in blue, green, brown, and magenta, are announced by the Mansfield Photo Research Laboratories, 701 S. La Salle Street, Chicago. These toners work with all types of paper and a wide variation of tones may be secured in each color, or combination toning may be done. These toners are simple to use—only the one solution being required for the complete toning process.

## New American-Made Camera

The new "Vokar" is to be put on the market in early November by Electronic Products Mfg. Corp., Ann Arbor, Mich.

This camera will provide a coupled shutter-diaphragm control which automatically sets the diaphragm in proper relation to shutter speed. Triple anastigmat Vokar color corrected lenses will be used, and shutters will be of the Compur type. Negative size will be 2 1/2x2 1/4 inches, 12 exposures on standard 120 roll film.

The Vokar is expected to be offered in three models from \$15 up.

## FilmSlide on Use of Exposure Meters

A new sound-slide-film on the use of exposure meters, is now available for camera clubs and other interested groups. The film deals with the use of exposure meters under all conditions, and shows with specific examples how to obtain proper exposure under unusual, difficult conditions, with the General Electric exposure meter. It contains representative pictures and explains how the exposure meter was used to determine proper exposure for each.

Requests for the film should be sent to Brobuck, Inc., 35 East Wacker Drive, Chicago, Ill.

## Spotlight Plugs Into Speedgun

A new focusing searchlight is announced by Folmer-Graflex Corp. for use with the Deluxe C Speedgun and 3 1/4" x 4 1/4" or 4" x 5" Speed Graphic cameras. It is also for the Deluxe C Jr. Speedgun with the 2 1/2" x 3 1/4" Miniature Speed Graphic.

This Focusin Spotlight plugs into the above mentioned speedguns, drawing current from the speedgun batteries. The light supplied is invaluable for night flash photography where outside illumination is insufficient to permit normal use of either the range finder or the ground glass viewing screen.

The new accessory also serves as an ideal test lamp, visually showing the strength of the batteries and indicating when replacements should be made.

## Refine-Tone Refinishing Service

Refine-Tone Process is a refinishing service now offered to the miniature camera public. Enlargements are made with smooth velvety tones, with no grain or blemishes. Even scratched, grainy or otherwise poor negatives, it is claimed, can be made to produce fine prints.

The standard 5x7 Refine-Tone enlargement is \$2. Enlargements are made from 35 mm. (and larger) negatives, from Kodachrome transparencies, and from motion picture frames (16 mm. positive or Kodachrome).

For further details, write Cine Craft Studios, 33 West 42nd Street, New York City.

## Univex Films

All Univex films shortly will be 100 per cent made in the United States. Factories are now under construction for production of the 10 cent number No. 00 film, as well as the movie and Mercury film.

## Photo Catalog

An 88-page catalog is now ready for distribution by Burke & James, Inc., 223 West Madison, Chicago, Ill., in which is listed their complete line of cameras with current prices, and also accessories and darkroom supplies of all kinds.

35MM. PRINTS 4c EACH \$1.00 PER ROLL

24-HOUR SERVICE  
No Charge for Developing-Credit Refund on Men Printables  
Here's biggest bargain for 35mm. high quality, fine grain, expert work. ROLLS DEVELOPED FREE. All enlarged to 3 1/2x5 on proper contrast glossy paper. You pay only at rate of 4c per print for 25 prints, total \$1.00—balance of eleven Prints Free. Credit refund of 4c per negative (not including Free Prints) if less than 25 are printable.

REGULAR ROLLS—2 PROFESSIONAL PRINTS  
2 ENLARGEMENTS—ALL ONLY 25c COIN  
One Day Service. Cash with order. Send today, be delighted!  
Filmaster Co., Dept. 801, 664 Fellows Bldg., South Bend, Ind.



Now you can figure  
ENLARGEMENTS  
and REDUCTIONS  
INSTANTLY — ACCURATELY  
with this amazingly simple  
PHOTOGRAPHER'S  
CALCULATOR

A handsome 10 inch slide rule made of well-seasoned wood—white composition face permits fine calibrations and easy reading—magnifying indicator of unusual power fits compactly against face of rule—illustrated instructions on back of rule for ready reference—packed in neat pocket case with closing flap.  
**COMPLETE FOR ONLY**

50c  
Post Paid

### Every Photographer Needs One

Gives dimensions instantly and accurately in enlarging and reducing—percentages of increase and decrease—valuable help for all MINIFANS who do their own printing. Indispensable for photographers, photo-engravers, photo-finishers, ad copy writers, printers, etc.

Available by Mail Order Through Minicam Exclusively

For complete outfit, send 50c in coins or U. S. stamps (80c in Canada). Mailed post-paid. Satisfaction guaranteed or money refunded. (Dealers write for quantity prices.)

MINICAM, 22 E. 12th St., Cincinnati, Ohio

Gentlemen: Please send.....Photographer's Calculators.

Name .....

Address..... City..... State.....

Name of my photo dealer is.....



New Agfa Texture Screens are available in four types: three of the screens are fabric textures, identified by the names Satin, Oxford and Homespun, while the fourth is an unusual, irregular pattern named Ripple. The Texture Screens measure 8x10 inches in size and can be used for both contact and projection printing, being placed in immediate contact with the photographic paper during exposure. The same contrast grade of photographic paper is employed as when prints are made without a Texture screen.

The Agfa Border Mask is an 11x14 inch negative especially designed for use with the Texture Screens. The Border Mask provides a 7/8x9 1/4 inch field with an attractive etching-edge border.

The four texture Screens are available at \$2.50 each or in sets of four with the Border Mask included at \$10 per set. The Border Mask separately is \$3. The Screens and Mask are made by Agfa Ansco Corp. and can be obtained through regular photographic dealers.

#### Using Exposure Meter for Print Making

"How to Use the G-E Exposure Meter for Printing and Enlarging" is the title of a new bulletin available from the General Electric Co., Schenectady, N. Y. The meter is used to measure light transmitted through a negative, for determining contact printing and enlarging exposures. The folder describes, with illustrations, several methods for using the meter in this way. Also included is a chart for determining exposure time for different sizes of enlargements.

#### Instruction Booklet

"Helpful Hints," an instruction booklet, is free for the asking from Royaltone Laboratories, 37 West 57th Street, New York City. The booklet lists ten reasons why amateurs spoil pictures, and how to prevent these errors. A chart showing film speeds and filter factors of popular sizes and makes of film is also included.

#### Christmas Greeting Card Outfits

Two Xmas Greeting Card outfits are available from Merit Photo Service, 29 Norwood Place, Bloomfield, New Jersey. Each set contains ten Christmas messages and eight decorations. The decoration negatives are separate from the greetings, and may therefore be used in any desired combination. The decorations may also be used as full page decorations on French-fold cards, etc.

One set sells for \$2, and the other for \$1. The first has film negatives, and the latter paper negatives. Decorations and messages are identical. Also, the film negative set contains four picture negatives.

# FOTO-EYE

## STRIP PRINTS

**EXCLUSIVE PACKAGE  
PROTECTS NEGATIVES**

Once you've tried Foto-Eye prints, you'll never be satisfied with the old-fashioned kind. Without extra cost, you win on two counts—

First, every single frame of your negative is photo-electrically analyzed... every single frame a scientifically accurate print, showing maximum enlarging possibilities.

Second, exclusive twin-compartment container seals negative against dust or unnecessary handling — prints are full length of negative on single strip — easy to file or order enlargements.

**EACH FRAME ANALYZED  
PHOTO-ELECTRICALLY**

Ask your dealer... or write  
to Emby Photo Products,  
1041 S. Olive, Los Angeles  
or 630 9th. Ave., New York

**Emby PHOTO PRODUCTS**

## CANDID CAMERA FANS ALL THIS FOR \$1.75

ANY 36 EXPOSURE ROLL—1. Fine grain developed; 2. One 3x4 glossy finish print of each 36 exposures; 3. Your negative vaporized (preserves negative forever); 4. Reload your magazine with Super Sensitive Fanchromatic film, 36 exposures; 5. Valuable coupon with each order. Total Value \$3.35. Yours for \$1.75. California buyers include sales tax. Write for free mailing bags.

16 Exposures, same as above, \$1.25

**HOME-PHOTO SERVICE**  
BOX 88 HUNTINGTON PARK, CALIF.

## ALL RISK CAMERA INSURANCE

### Protect Your Entire Equipment

Policy covers losses resulting from Fire, Theft, Burglary, Accidental Damage, Transit Hazards and other causes. Coverage is All Risk, World-wide. Adjusters everywhere. Why risk loss of expensive equipment when Complete and Dependable Protection is so reasonable in cost? Write for complete particulars today—Now!

**R. L. MUCKLEY & CO.** Tribune Tower  
Chicago, U. S. A.



## FOTH DERBY

These are exceptionally fine miniatures for their surprisingly low prices. They are of precise and quality construction throughout, yet amazingly light and compact.

The Foth-Derby cameras are equipped with the latest type delayed-action focal plane shutters with speeds from 1/25 to 1/500 second, large magnifying tube-sight view finders and have many other features, including front lens focusing up to 3 1/2 feet. You get 16 pictures, half V.P. size (1 1/4 x 1 3/4) on a roll of standard V.P. film.

with 2" Foth Anastigmat f/3.5.....\$21.50

with 2" Foth Anastigmat f/2.5.....27.50

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INCORPORATED  
127 WEST 42<sup>ND</sup> STREET NEW YORK

## Announcing NEW IMPROVED VITACHROME PAPER FOR SIMPLIFIED COLOR PHOTOGRAPHY

HIGHER SPEED, GREATER BRILLIANCE AND QUALITY  
Color photography on paper by single contact printings from Kodachrome Transparencies in two to five minutes by No. 2 Photoflood, Fix and wash. That's all. Sold in the following sizes:

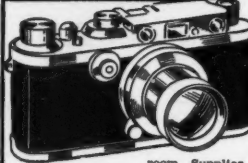
1 1/4" x 2 1/4", 1 doz. sheets.....	4" x 5", 1/2 doz. sheets.....	\$1.50
2 1/4" x 3 1/4", 1 doz. sheets.....	5" x 7", 1/2 doz. sheets.....	2.00
3 1/4" x 4 1/4", 1/2 doz. sheets.....	7" x 10", 1/3 doz. sheets.....	4.50
4, 8 and 16-oz. bottles, fixative, 35c, 60c and \$1.00.		

See your dealer or send to

**Vitachrome Film Corporation**

1150 Columbus Ave., Tel. Highlands 4900, Boston, Mass., U.S.A.

## FREE CAMERA BOOK!



room Supplies and photographic accessories. Central is headquarters for photography—send post-card now for Free Bargain Book.

**CENTRAL CAMERA CO.** 230 S. Wabash  
Dept. K12, Chicago, U. S. A.  
**PHOTOGRAPHIC HEADQUARTERS since 1899**

Just out — Central's new money-saving Bargain Book of everything photographic — sent free on request while the supply lasts. Many bargains in still and movie cameras, lenses, exposure meters, filters, tripods, enlargers, Dark-

## Mercury Copying Stand

The Mercury Copying Stand (\$17.50) permits the Univex Mercury camera to be used for photographing small objects or flat work at close range.

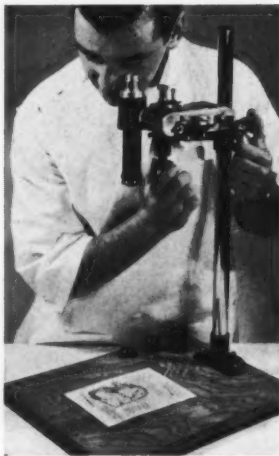
The base is a plywood board, 15 3/8" x 12", to which a steel tube is fastened by a flange and bolts.

A set of extension tubes for bringing the lens into focus at close range, and a ground glass focusing screen are included.

Fields from 9" x 11 1/2" down to 3/4" x 1/2" may be photographed. Each tube gives a different field size, or the tubes may be used in combinations to give intermediate sizes of field.

Any Mercury Camera can be used with the stand, and any of the 35 mm. lenses may be used.

The camera holding bracket is moved up or down on the arm to approximately



the correct position and clamped in place. Then the object is brought into sharp focus.

Focusing is done on ground glass while the image is viewed through a magnifier. When correct composition and focus are obtained, the camera bracket is swung through 90 degrees, clamped securely in place, the lens with tubes is moved from the focusing position to the camera, and the desired number of exposures made.

For further details, write to Universal Camera Corp., 28-30 West 23rd Street, New York City.

## New Panthermic Instruction Booklet

The instruction booklet accompanying each package of Panthermic 777 Developer has just been completely revised by the Defender Photo Supply Co., Rochester, New York. Now included are more time-gamma tables for all popular new U. S. films, and retained are the complete instructions and replenishment tables for all sizes of films. The booklet also contains a list of prices and sizes.

777 was developed by Harold Harvey, and first presented to the public last year. It produces negatives of extremely fine grain, can be used at any temperature from 60 to 90 degrees F., and the use of a replenisher makes possible uniform results.

777 is now available in a wide variety of sizes, also in liquid, ready-to-use form.

## TUBES

16 oz. Base Developer, \$.30—Processes 1 roll standard 35 mm. film.

8 oz. Replenisher, \$.45—Processes 5 rolls standard 35 mm. film in combination with 16 oz. Base.

## LIQUID

16 oz. Base Developer, \$.50—Processes 1 roll standard 35 mm. film.

16 oz. Replenisher, \$.90—Processes 10 rolls standard 35 mm. film in combination with 16 oz. Base.

32 oz. Base Developer, \$1.00—For use in 32 oz. developing tanks.

## BULK

Standard 32 oz. unit (Base and Replenisher packed together), \$2.00—Processes 21 rolls standard 35 mm. film.

32 oz. Replenisher, \$1.50—Processes 20 additional films.

## CARTONS

1 gal. Base or 1 gal. Replenisher, Each.....	\$3.00
5 gal. Base or 5 gal. Replenisher, Each.....	\$12.00
25 gal. Base.....	\$45.00

### New Enlarging Paper

In creating Halobrome, a new enlarging paper, The Haloid Co. obtained 1,320 reports from professional, commercial and portrait photographers, news camera men, and photo finishers stating the qualities they considered most important in an ideal enlarging paper.

Among qualities claimed for Halobrome are: latitude in exposure that allows up to 50 per cent over or under exposure, easy development in any standard M-Q developer, forced development without fog, an extra, softer contrast in addition to four standard contrasts, uniform tone value in various contrasts, uniform contrast and uniform exposure from lot to lot.

A \$1 kit offered for test purposes, contains four sheets each, size 8"x10", of the following surfaces: White Semi-Matte, White Glossy, White Matte, White Egg Shell, Chamois Smooth Lustre, and Chamois Egg Shell.

When ordering a trial kit, address The Haloid Co., 405 Haloid Street, Rochester, New York, and enclose check or money order for \$1.

### Pliofilm Photo Albums

Pliofilm is a transparent, soft material with a high rubber content. It most closely resembles cellophane,

is moisture-proof, durable, non-inflammable and will not stick to itself. Its soft texture protects film surfaces.

Albums of pliofilm are now made in book form, in standard popular print sizes. Prints are inserted into the envelope - pages facing the transparent surface while the



negatives are placed behind the prints toward an opaque black sheet of pliofilm. Additional information will be furnished by the manufacturers, Protex Products Co., 230 Fifth Ave., New York City.

### Home Cine Processing Outfit

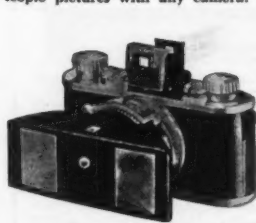
Graphic-Reel (\$12.50) is a new home processing outfit for bulk movie film. It is easy to use, comes completely set-up, and can be used in a space no larger than 18 inches square. It uses standard 8x10 developing trays, and requires only 1 quart of solution. It holds 32 feet of 16 mm. or double 8 mm. film. Graphic-Reel is built on a firm base, and spring hooks hold the reel steady in its metal supports.

A new development in the Graphic-Reel is the "Sliding Bar." As film becomes wet, it has a tendency to stretch, thus loosening on the reel and overlapping. The Sliding Bar causes the film to tighten as it stretches, keeping it at a uniform tautness on the reel.

Amateur movie fans can obtain more information about this new home processing outfit by writing to Superior Bulk Film Co., 188 West Randolph Street, Chicago, Ill.

### Stereoscopic Attachment

The Stereo-Tach is an accessory which makes stereoscopic pictures with any camera. It is used in front of the lens and produces a pair of stereoscopic negatives, instantaneously, with a single exposure.

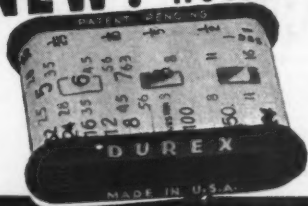


Contact prints or enlargements are placed in the stereoscopic viewer furnished with the outfit.

The Stereo-Tach, formerly manufactured by the Commonwealth Mfg. Corp., has been taken over by

Stereo-Tach Division of Advertising Displays, Inc., Covington, Ky.

**NEW!** IT'S BETTER!  
IT'S SIMPLER!  
IT'S SURER!



**DUREX EXPOSURE METER**

Easy to Operate, Simple to Calculate!  
You Get Perfect Pictures Everytime!

FOR BOTH  
CINE &  
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Features: Weston calibrations 4 to 100; for outdoors, indoors; color, black and white. Exposures 10 sec. to 1000th; Cine frequencies: 8 to 120 frames per sec. Wide range latitude. Compact, light and unbreakable. Approved by world famous film laboratory. List \$2.25. At your dealer. Literature upon request.

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Hundreds of fine Cameras and Equipment at Real Bargain Prices. Write us your needs. Get our prices.

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**CHAMPLIN 16**  
FORMULA  
FINE GRAIN DEVELOPER  
CHEMICAL SUPPLY CO.  
HOLLYWOOD, CALIFORNIA

**THE Pierce EXPOSURE METER**

Newest optical type meter. . . . Appears, is held and operated exactly like expensive photo-electric meters. . . . Operation quick and simple. . . . Meter is entirely pre-settable. Complete with neck cord, instructions, in attractive box. Comes in 2 models for motion picture cameras and for still, each at. . . **\$1.85**

Send for literature M-11. At all leading dealers.

**RAYGRAM CORP.**  
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### Bee Bee NEGATIVE FILE

... consisting of substantial, handsome cabinet with complete indexes and 100 transparent envelopes—capacity from 200 to 900 negatives—depending on film size.

- No. 1—For single and double 35mm. frames ..... \$2.00  
No. 2—For Vest Pocket, 4 x 4 cm. and 3 x 4 cm. negatives ..... \$2.00  
No. 3—For 2 1/4 x 3 1/4, 2 1/4 x 2 1/4 or 1 3/8 x 2 1/4" negatives ..... \$2.00

### Bee Bee FILETTE

The most economical film filing method. Contains envelopes and indexes of identical quality and quantity for Nos. 1, 2 and 3 film sizes. Banded in black leatherette covered cardboard container, cover opens horizontally. Priced for all sizes at only .....

**\$1-00**

AT LEADING DEALERS EVERYWHERE

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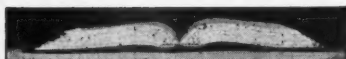
### PROTEKTOR 35MM. NEGATIVE FILES

Newest and safest method of caring for minicam film. Made of TRANSPARENT cellulose acetate. Holds film flat, eliminating danger of scratches and finger prints when examining. Introductory package of four files and data charts, for one roll, 15c. Standard file for five rolls, with data charts and index, \$1.35. DeLuxe file for 20 complete rolls with cross index, in beautiful natural finish wood case, \$5.75. Postpaid in U. S. A.

PROTEKTOR, BOX 98, PASADENA, CALIFORNIA

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After careful research the publishers of MINICAM decided this was the best binder built. Handsome leather-like cover. Gold Stamped Titles. Compact, simple, secure binding device. By special arrangement this unusual binder is offered at the low price of

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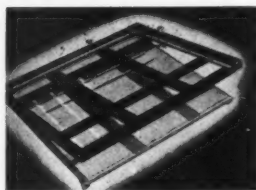
Cash with the order. Money refunded if not MORE than satisfied.

**THE GILMER BINDER, 228 Chancellor St., Philadelphia, Pa.**

### New Princeton Easel

The Princeton easel (\$12.75), manufactured by the Price Industries Corp., 130-134 West 17th Street, New York City is of the constant-center type.

The masks consist of four strips of heavy gauge steel, 1 1/2 inches wide. These hold the paper firmly and make sharp, clear border lines. Each pair of masks (on opposite sides) is operated by a single control button, which moves both border strips symmetrically toward or away from each other. This means that all four masks are set by two motions, and that centering of the pairs is automatically maintained.



### Dry Mount for Snapshots

Snap-Shot-Stix is a new dry mount for amateur use, announced by Seal, Inc., Shelton, Conn. Snap-Shot-Stix affixes pictures to the mount or album in just a few seconds, entirely flat. An ordinary electric iron is used to seal the picture to the page.

Snap-Shot-Stix are available in three sizes, 10 cents per package. For film size No. 116 and No. 120, each package contains 2 dozen mounts. For film size 122 or postcard size, each package contains 20 sheets of Snap-Shot-Stix.

### Sun Shade and Filter Mount Combined



A new line of combination sun-shade and filter mounts is announced by the Lafayette Camera division of the Radio Wire Television, Inc. (formerly Lafayette Camera Corp.). These mounts are made of duraluminum, and the inside surfaces are spray coated with a black felt composition to eliminate reflections.

The shade consists of a clamping ring which attaches to the camera lens barrel. Into this is screwed the hood, which also serves to clamp the filter in position. The recessed seat for the filter in the clamping ring is felt lined to prevent scratching. These shades are available in a variety of sizes to fit lenses up to 42 mm. diameter.



## Spotlights

The Britelite 500-watt Spotlight, announced by Motion Picture Screen & Accessories, comes in two models: No. 519 (\$19.75) with a 6" Fresnel lens, and the De Luxe model No. 535 (\$35). A tripod to be used with the above is \$7.50. Features claimed for these spotlights are as follows:



- (1) Narrow beam—18" spot at 10'.
- (2) Wide beam—10' flood at 10'.
- (3) Rapid focusing—push rod with positive lock.
- (4) Soft beam edge—no color fringe.
- (5) Suitable for natural color photography.
- (6) Even field of illumination.
- (7) Efficient metal reflector.
- (8) Ample ventilated.
- (9) 6-inch lens guaranteed against cracking by heat.
- (10) Lightweight alloys and welded form, steel construction.
- (11) 12-foot Underwriters approved cable and switch.

## Optilite Filters

An all-American made set of plastic filters, for both still and movie cameras, are announced by the B-F Manufacturing Co., 2106 Olive Street, St. Louis, Mo. The filters are made of a newly-developed plastic called "Optilite."

B-F Movie filters in slip-on mounts are obtainable from 75 cents to \$1 each, depending upon size. These also come in complete sets of four filters and sunshade, in carrying case, \$3.75 to \$4.50. B-F Still Camera Filters are priced from 50 cents to \$1, available in mounts at slightly higher prices.

## Transparency File

Filmdux, a new film filing system. W. N. deSherbinin, Mount Kisco, N. Y., provides panels of laminated paper board die-cut to hold twelve 35 mm. or Bantam 3x2" card-board-mounted transparencies.



Each transparency is individually housed, completely visible, and at the same time, protected from the hazards of handling.

Filmdux Panels, each housing twelve transparencies, are priced at 25 cents each. A loose-leaf binder holding twelve panels, housing 96 transparencies is priced at \$1.25, panels extra. An especially-designed vertical file holding 25 panels accommodates 300 transparencies. This file, complete with a set of 25 divisions A-Z and numerical guides, is priced at \$2.50, panels extra. An index, with a capacity of 1,000 titles, is priced at 35 cents.

## Superpan Supreme Now in Rolls and Packs

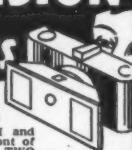
Agfa Superpan Supreme, a high-speed, fine-grained panchromatic emulsion, is now available in roll and pack form. It provides twice the speed of Superpan roll and pack film, which it replaces, and is also an improvement in fineness of grain and balanced color sensitivity.

The new Superpan Supreme is available in all popular sizes of rolls and packs at no increase in price over Agfa Superpan formerly supplied. Until new cartons can be supplied for all sizes, some sizes will be supplied in old-type Superpan cartons, identified, however, as the new Supreme type by a small label or the imprinted word, "Supreme."

## THE Christmas Gift for the Camera Fan!

# New STEREO-TACH MAKES 3rd DIMENSION SNAPSHOTS

### WITH YOUR OWN CAMERA



Now YOU can take pictures with DEPTH and perspective. Just use a Stereo-Tach in front of lens. With a single shutter click you take TWO pictures, one film, from different angles. Place prints in viewer and people and objects STAND RIGHT OUT from background, as in real life. Films developed and printed or enlarged in usual way. No special skill needed. Pictures can be projected if desired.

# \$11.75

### COMPLETE

Complete outfit includes amazing Stereo-Tach (patents pending) and modern stereoscope, sample prints, spectacles for viewing projected pictures, and simple, easy instructions. All for only \$11.75. SATISFACTION GUARANTEED OR MONEY BACK. Ask your dealer today, or rush order direct to manufacturer. Send check or money order and we ship Prepaid. Act TODAY.

STEREO-TACH Division

Advertising Displays, Inc., Dept. ED  
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Illustrated Booklet FREE

## NEW! MORE LIGHT! BETTER LIGHT!

# Safe-brite

DARKROOM \$1.25 REFLECTOR



## GOOD NEWS

1. No groping in dark
2. Eliminates eyestrain
3. Better, faster work

Work with good safelight, semi-indirect to give good vision in every corner of your darkroom...the same kind of light distribution you demand in your home or office. Relieves strain, saves eyes, makes far better work possible.

Entire fixture shatterproof and translucent, no blind spots, 7" over-all size, weighs only 5 oz., instantly attached or moved to any socket in any position. Threaded bowl can't drop off...uses 15 watt standard globe...you get much more light, absolute safety for negatives or paper, many other advantages.

Choice of scientifically accurate colors: yellow, orange, ruby red. Special offer—lamp complete with 3 colored reflectors \$2.00—individual reflectors 50c each. See at your dealer's or order direct (postpaid). —Emby Photo Products, 1041 S. Olive, Los Angeles, or 630 9th Ave., New York.

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# 35 mm FILM

PROMPT SERVICE

25 Ft. Agfa Ultra Speed.....	\$1.00
25 Ft. Agfa Supreme.....	1.00
25 Ft. Eastman Plus X.....	1.00
25 Ft. Eastman Super X.....	1.00
25 Ft. DuPont Superior.....	1.00

Postpaid in U. S. A. If Cash with Order.

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## GREENSBURG PHOTO SUPPLY CO.

No. 7 Fisher Bldg., Greensburg, Pa.

## Barbeau Photo Supplies and Camera Co.

33 EAST BRIDGE STREET OSWEGO, NEW YORK

Don't cry over spilled milk—send your next roll to us for perfect developing and Electric-eye Prints. Miniature camera films developed and  $3\frac{1}{4} \times 4\frac{1}{2}$  prints made. Send 36 exposure roll \$1.75, or 18 exposure roll and \$1.00. Twenty-four hour service. Reloads, 18 exposure 25c, 36 exposure 40c, panatomic or super X. Trade your camera in on a new model, for liberal allowance send a description of what you have and what you want. We sell nearly all kinds of cameras.

**Barbeau Photo Supplies & Camera Co.**  
33 East Bridge Street Oswego, New York



"Sorry, the editor can't see you. He's in his desk developing pictures."

**NEW! BALDOR LIGHT BOOSTER**  
*Makes EVERY Light A Photo-Flood!*  
**INCREASES LIGHT FROM ANY STANDARD BULB TO 6 TIMES NORMAL VALUE**

At last! Baldor Light Booster solves problem of indoor photography. Steps up light from ordinary bulbs to intensity of photo-flood! Gives brilliant light cheaply. Inside anaplasts now easy and inexpensive. Many critical picture-shooters say that Baldor Light Booster helps make much better night pictures. As many as eight 100 watt bulbs may be connected at same time. Any size or price standard bulb may be used. Furnishes ideal light for enlarging machine or printer. Gives two value light intensity at flick of switch. Light. Portable. Easy to carry. Weighs only 6 pounds. Costs only \$4.95. Quickly pays for itself in photo-flood savings. Guaranteed. Buy one at your dealer, or order direct from this ad, or write us for FREE souvenir print.

**FREE  
SOUVENIR  
PRINT**

**BALDOR ELECTRIC CO.**  
Dept. 200 St. Louis, Mo.



By **VICTOR H. WASSON**  
(Answers at end of Kwiz)

**A** PAGE of problems probing your proficiency in the perplexities peculiar to the production of negatives.

1. Let's suppose you are using a film with a Weston daylight rating of 125. What two factors can cause a change in this effective speed?

- Shutter speed
- Length of development
- Diaphragm stop
- Light conditions
- The developer itself

2. A negative produced a print with a circular spot like this. What happened?

- The enlarger lens had a "hot spot"?
- The bellows closed too fast?
- Uneven development?

d. Halation?

3. We've been intending to ask you this one for a long time. Just what negative quality does "gamma" denote?

- Density
- Contrast
- Key
- Sharpness



## NEW LOW PRICES BUT SAME HIGH QUALITY!

Your roll developed in Champlin's No. 16 fine grain developer and each exposure enlarged to  $3\frac{1}{4} \times 5$  on glossy single weight paper. 36 exposure roll of 35mm \$1.25; 18 exposure roll of 35mm \$.65; 16 exposure roll of vest pocket \$.65; 828 \$.30. All work guaranteed the best. 24-hour service.

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4. When is it unlawful to photograph a pedestrian on a public thoroughfare?

a. When the picture is for newspaper publication.

b. When for use in an advertising or publicity campaign.

c. When the subject is unwilling.

d. At night with flash bulbs.

5. A pin hole lens is—

a. A lens with a hole in it.

b. A lens for shooting through small holes.

c. A very small hole in a camera admitting light to form the image before it.

d. An extremely small lens.



6. These sketches show three seemingly logical ways light passes from subject to lens to film to form an image. Which is correct, A, B, or C?

7. Let us look at two negatives—

A. is underexposed and overdeveloped.

B. is overexposed and underdeveloped.

Apparently the factors of under and over exposure and development should compensate for each other, but they don't. Check which of the above will show the following undesirable qualities—

a. Fogging of clear areas. A or B?

b. Insufficient contrast. A or B?

c. Blocked up highlights. A or B?

d. Excessive contrast. A or B?

8. Every so often we hear someone mention "process" film. What is its special use?

a. Portraiture

b. Pictorialism

c. Commercial and copy work

d. Action shots

9. We hope that you are not afflicted with it, but if you were, to what photographic chemical would you be allergic?

a. Hypo

b. Alum

c. Metol

d. Acetic Acid

e. Carbonate

If so, what symptoms would you look for?

1. Swollen eyes

2. Fever blisters

3. Sore throat

4. Skin rash

10. If you developed a negative in the normal way, but were most surprised when you produced a positive, you would know that—

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4 1/2 x 5 1/2 size 100 for \$1.00 8 1/4 x 7 1/2 size 50 for \$1.00

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2. Make a HOLLYWOOD POSITIVE TRANSPARENCY STRIP... glossy enlargements, approximately 3x5 (Univex Mercury 2 1/4x3), of all good negatives...
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**HOLLYWOOD SERVICE CO., Dept. CK**  
Box 789 Hollywood, California

- a. The hypo was stale.
- b. The film was lightstruck during development.
- c. Your lens needed correction.
- d. The film was at fault.

## Answers to KAMERA KWIZ

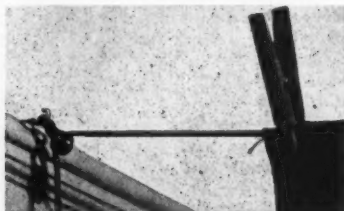
1. Emulsion speed is greatly affected by length of development and type of developer.
2. When the bellows of a folding camera is closed too rapidly, the imprisoned air may force the vanes of the shutter open in its attempt to escape, thus fogging the center of the negative and resulting in a light spot in the print.
3. Gamma denotes the contrast of a negative.
4. When the picture is to be used in an advertising or publicity campaign. A model release is necessary in this case.
5. A pin hole lens is a very small hole in a lightproof film holder that admits light in such a way as to form an image.
6. Sketch A shows the usual way a lens collects light from a subject and forms an image.
7. a. A b. B c. B d. A.
8. Process film is used for commercial and copy work.
9. Most sufferers are affected by Metol which produces a skin rash.
10. Film that is lightstruck during development will sometimes reverse itself becoming a positive.

## BUILD Yourself

### Hooks Hold Background

An efficient method for hanging drapes in the home to be used as backgrounds, is to screw two small cup hooks in the ceiling molding opposite each other.

Then, when it is desired to hang up a drape



for home portraiture, a rope line can be attached to the hooks with a pulley at one end

and the drape hung from it with spring clothes pins.

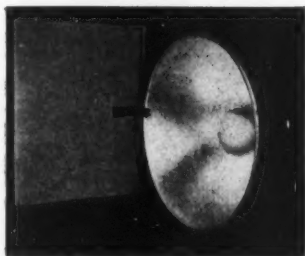
The hooks can be painted the same color as the walls to make them inconspicuous when not in use.—*Louis Hochman.*

### Light Reflector Shield

A shield for light reflectors, is valuable as a guard against lens flare when shooting against the light. A simple, adjustable one can be made from a piece of strong cardboard, a piece of stiff wire, such as wire clothes hangers are made of, and a spring-type clothes pin.

A wire, about as long as the card used, is run through a hole carefully bored in the heaviest part of one side of the

clothes pin. This should fit snugly but should permit turning with little effort. The two ends of the wire are bent at right angles for greater support.



The clothes pin, with the wire run through the hole, is laid on the card near one edge, as in above. The wire is fastened to the card with small pieces of fine wire run through the card and around the larger wire in several places, or with adhesive tape.

With a sharp knife a piece of the card is cut away, following the outline of the clothes pin to the card's edge. This opening allows the card to be readily adjusted by being swung back and forth on its wire hinge while it is clipped to the reflector. The shield may be clipped to the reflector's edge at any point.

—*George Carlson.*

### Self Portraits With a Light Switch



Without a self-timer, self portraits are easily made indoors in semi-darkness by opening the shutter at "time" and controlling the exposure with the light switch, which can be held in the hand" so as not to appear in the finished picture.—*Kenneth Murray.*



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## Copying Stand

A camera with a ground glass back and double extension bellows can be made into an efficient copying unit by attaching it to an inexpensive home-made stand.

The stand is constructed of 1" wood and consists of a base-board 12" x 18" x 1", an upright piece measuring 5"x30"x1" in the center of which a 3/8" slot is cut, and an arm made of two pieces of wood, one 5"x6" and the other 6"x8" (for shape of this, see Fig. 2). These pieces can be cut at a small extra cost in the lumber yard where the wood is purchased or they can be sawed at home from a board 12" wide and 4' long.

The upright piece is fastened to one side of the base with four metal angle braces.

These are screwed to the base and the upright as shown in Fig. 1. Side A in Fig. 2 is then fastened with screws at right angles to side B (see Fig. 2) and B is then fastened to the upright by means of a



THE WING NUT is loosened and the camera arm moved up or down until the correct image size is obtained. The nut is then tightened and the camera focused.

FIG. 1

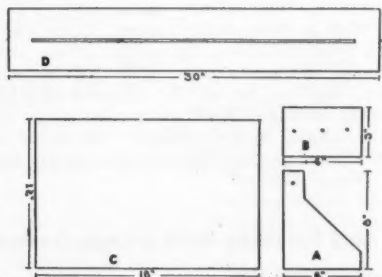


DIAGRAM showing the parts of the copying stand. A and B form the sliding bracket. C is the baseboard, D is the upright on which the bracket slides.

FIG. 2

1 1/4" bolt which is run through a hole in B and then through the slot in the upright and held firm by a wing nut.

The three dots on part B (Fig. 2) mark the bolt holes which increase and decrease the possible focusing lengths. The bolt which secures the sliding arm to the upright may be changed to any one of the three holes. The center position, however, will take care of all needs with a lens of average focal length.

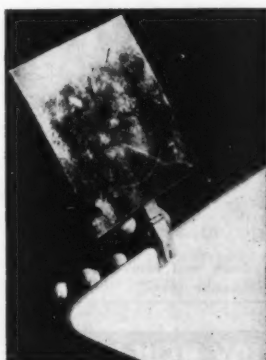


The camera is attached to the wooden arm by a large-headed stove bolt just long enough to clear the thickness of the arm and give sufficient hold in the tripod socket of the camera.—*Donald F. Hall.*

### Emergency Ground Glass

A substitute for a piece of ground glass can be made from a discarded negative of suitable size. Sandpaper the dull side completely and evenly. Sandpaper one side only. It is then usable as a ground glass focusing screen for subjects which are well lighted.—*Rodney Ahner.*

### Reflector for Developing Tray



to throw a concentrated beam of light from the safelight onto the prints.—*Kenneth Murray.*

### Preserving Life of Flood Lamps



This is avoided by wrapping each section of the stand, immediately underneath the wing nut, with a strip of tape or rubber splicing compound, which serves as a shock absorber.—*Kenneth Murray.*

Unless the darkroom safe-light is moved about to a position adjoining the tray used for developing trends, inspection is frequently difficult. By cementing a small glass or metal mirror to a spring clothespin, it can readily be clipped to the edge of the tray so as

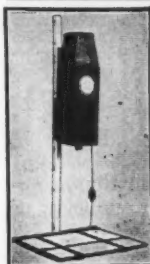
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High contrast with clear highlights is very desirable for movie titles, but few cinecamerists use enough D-8, or D-9, or their equivalent, to keep a fresh and therefore non-staining solution on hand. D-72 (or similar paper developer), however, can be converted to a high-contrast film developer by the addition of potassium bromide and sodium hydroxide. These chemicals are very conveniently stored as 10 per cent solutions.

To one part of the D-72 stock solution add 1/10 part of the potassium bromide, and 1/10 to 1/5 part of the sodium hydroxide. Dilute with three parts of water and use. The bromide inhibits chemical fog and the hydroxide accelerates the developing agents. Thus modified, the developer gives very good blacks and clear highlights. It does not keep and should be discarded after each batch of titles—*Larry Penberthy.*

### Cleaning

Here is a method of disposing of developer stains on clothing. At the 5 and 10 cent store buy a can of powdered cleanser sold under the trade name of *Annette's*. Moisten the developer stain with water, apply a little of the powder, rub it in, then apply a little more without rubbing. When it's dry, brush it off, and the spot will have vanished.—*Bruce Cole.*

### Removing Black Spots from Prints

Dip a toothpick in ink eradicant, touch the spot lightly, and blot the print. Repeat until the spot is gone or is toned down until it blends into the surrounding area. Then wash the print thoroughly.

Farmer's Reducer, diluted with an equal part of water to slow its action, may be substituted for the ink eradicant and works equally well.

If care is used in applying the bleach so that only the offending spot is affected, no blemish will show on the print.—*Bruce Cole.*



"A little retouch work and this will make a dandy action shot."

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**By WILLIAM L. MORGAN**

*Illustrated by the Author*



# How to select YOUR CINE CAMERA

**S**O you want to make movies? There's a lot of satisfaction and enjoyment in capturing good times and memorable events on a narrow strip of celluloid, later to bring them magically to life again on your own movie screen.

What camera should you buy? Of the fascinating array of makes and kinds, there is somewhere a camera ideally suited to your needs. These needs may vary considerably, but weighed individually, one by one, and tempered by budget limitations, will at last point to one camera above all others—the cinecam you want.

The easiest way to determine what camera will best meet your needs is to consider separately the varying features a movie camera may have, and after weighing them carefully according to your individual wants, check off the features you require (Fig. 1). The camera

THE MOVIE CAMERA I WANT:					
SIZE 16 mm 8 mm		LENS: f. _____		LENS <i>fixed focus</i> MOUNT <i>"variable"</i>	
INTERCHANGIBLE LENSES	YES NO	EXTRA SPEEDS	HALF SPEED SLOW MOTION	PRICE \$	LIMIT: _____
SPECIAL FEATURES:					
MAGAZINE LOADING		<input type="checkbox"/>	TURRET HEAD		<input type="checkbox"/>
SINGLE FRAME		<input type="checkbox"/>	FOCUSING FINDER		<input type="checkbox"/>
REVERSE CRANK		<input type="checkbox"/>	CARRYING CASE		<input type="checkbox"/>
CAMERA MOST NEARLY FITTING THE ABOVE DESCRIPTION: _____					
PRICE \$		SHUTTER SPEED AT 16 FRAMES: <u>1</u>			

CHARLEY CINEFAN looks over a modern home movie camera (top). In order to check its features on this table. For a complete listing of modern cinecams, including latest prices, see page 102. Fig. 1

that most nearly fits your description is the one you will buy—if, of course, it is congruous with the price you can afford to pay. If it is not, make adjustment for the features you are least reluctant to part with, until your camera falls within your price range.

*Sixteen or eight?* First of all, the size. Shall it be 16 mm or 8 mm? This refers to the width of the film in millimeters (Fig. 2). Film in amateur use is almost exclusively in one of these two sizes. A

# Cinecam

few cameras do use 9.5 mm film—a size popular in Europe but seldom seen in this country. Standard professional film (35 mm) has a few scattered staunch supporters among amateur movie-makers, but it is expensive in film stock, processing, and equipment—and most of it is nitrate base and thus highly inflammable. The regular amateur sizes are made only of “safety” acetate base—a slow-burning, safe film stock.

Sixteen millimeter has the usual advantage that comes with size. It will permit use of a larger screen and furnish sharper pictures. However, the difference is not nearly so great as might at first be inferred, particularly for movies in the home, where a relatively small screen size is used anyway; it is mainly in auditorium shows and screenings for large gatherings that the superiority of 16 mm is apparent. For home movies, the edge is definite but slight.

Sixteen millimeter has an important advantage over eight millimeter in availability of film stocks, the choice of different makes and types of emulsions. Although color film (Kodachrome) is available in either width, several of the ultra-fast and other special purpose black-and-white films can be bought only in 16 mm.

There are a few more stock exhibitors' films in the 16 mm size than in 8 mm—

these are films you might rent for an evening from a film library for projection in your home.

One other advantage for the 16 mm is ease of handling in editing. Sixteen millimeter film is easier to splice, roll up, and view. While a magnifying viewer is a great help in putting together 16 mm scenes, with 8 mm it is a necessity.

*Advantages of eight millimeter.* The chief advantage of 8 mm over 16 mm is its economy—in camera, film, projector, and accessories. It has made movie-making possible for many who otherwise could not afford it.

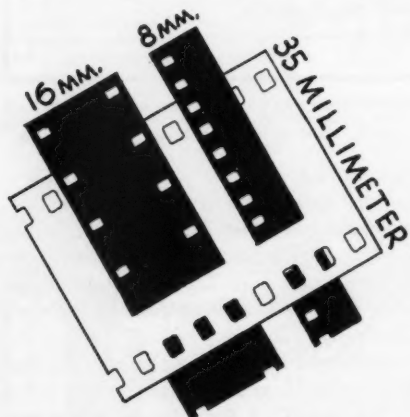
Another advantage is its compactness. The camera is small and light enough to be slipped into the coat pocket when not in use. (Fig. 4.)

There are two types of 8 mm cameras—the straight-8 and the double-8. The latter takes pictures on half the width of standard 16 mm film at a time. The spools are reversed to take the other half. The film is slit to 8 mm width by the laboratory doing the processing. An advantage of the double-8 is the fact that it has more film capacity with one loading—usually 25 feet double width. This provides 50 ft. of 8 mm width which is equivalent in screen time to 100 ft. 16 mm. Film length in the single-8 usually is 30 feet.

*The Lens.* The lens focal length is the distance from the lens to the image on the film. It determines the relative size of the image. Long focal length lenses take in a relatively small field and magnify the subject; shorter focal length lenses take in more area, but make the subject relatively smaller. The usual lens for a 16 mm camera has a focal length of one inch (or 25 millimeters); the usual lens for an 8 mm camera has a focal length of one-half inch (12½ or 13 millimeters).

*Lens Speed.* The choice usually made in buying a movie camera is between an f3.5 lens (moderately fast) and an f1.9 or f1.5 lens, which is considerably faster.

As most of your movies will be made with the lens “stopped down”—that is,



**ACTUAL FILM SIZES.** The size of picture taken, that is each frame, in 35 mm. movies is approximately  $\frac{1}{2}$  by  $\frac{3}{4}$  inches. For 16 mm., approximately  $\frac{1}{4}$  x  $\frac{3}{8}$ ". For 8 mm., approximately  $\frac{1}{8}$  x  $\frac{3}{16}$ ". Fig. 2

**FRAMES PER SECOND**

HALF SPEED  
↓  
SOUND SPEED  
SLOW-MOTION SPEEDS

8 16 24 32 48 64

**SHUTTER SPEED**  
(VARIES WITH MAKE OF CAMERA)

$\frac{1}{15}$   $\frac{1}{30}$   $\frac{1}{45}$   $\frac{1}{60}$   $\frac{1}{90}$   $\frac{1}{120}$

SHUTTER SPEED varies inversely with frames per second. Fig. 3.

the diameter made smaller by an iris stop to decrease the degree of light that forms the image on the film, a fast lens has an edge over the slower lens only under special conditions. If you plan to make many movies at night or indoors, or with color film (which is relatively slow) you will find the greater lens speed to be very useful. Under average outdoor conditions, however, an  $f3.5$  lens will be quite adequate.

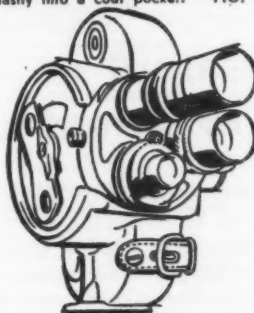
**Fixed or variable focus.** Lenses are mounted to be either fixed focus or variable focus. The point where a lens of a given focal length forms a sharp image varies slightly according to the distance of the subject from the lens. Thus to bring a close object into focus, the lens must be turned in the mount to make it slightly farther from the image. Distances farther than 100 feet are said to be at "infinity" and remain sharp at the 100-foot or infinity setting. The symbol for infinity looks like a figure "8" turned on its side. Focusing lens mounts are calibrated in "feet." The distance from camera to subject is measured or estimated, and the lens set accordingly.

Fixed focus lenses are permanently set by the camera manufacturer at an arbitrary distance, say 25 feet, and theoretically form a perfectly sharp image only of an object at that distance from the lens. However, because of a lens property known as depth of focus, objects at greater or less distance may also be in sharp focus. The depth of focus, or range of sharpness, increases considerably as the lens is stopped down to a smaller diameter. Therefore, subjects taken under good lighting conditions, with the lens stopped down, may be in sharp focus at widely varying distances from the camera, although it is permanently focused for a distance of 25 feet. (Fig. 8.) An exception would be objects very close to the camera; these, however, can be taken with an auxiliary "portrait" lens.

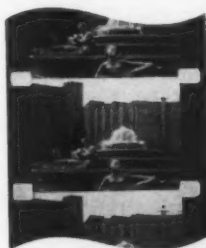
The variable focus lens is needed most by the amateur who makes movies under



COMPACT 8 mm. models slip easily into a coat pocket. FIG. 4



TURRET HEAD cameras accommodate two, three or four lenses of varying focal length. This permits rapid shifting from long shot to close-up, etc. FIG. 5

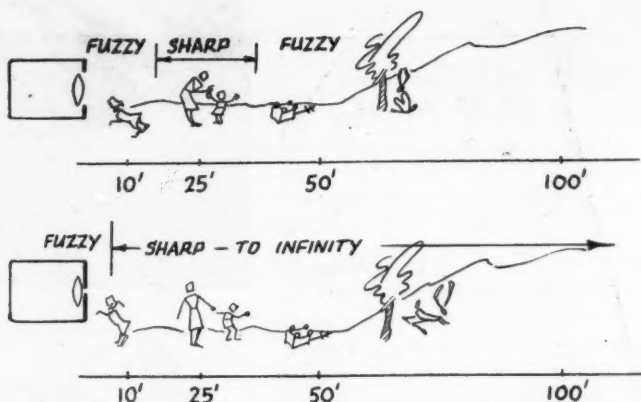


THE EFFECT OF long focal length. The frame at the left shows the size of field taken in with a standard (1-inch or 25 mm.) lens. The right-hand frame shows the result from the same position with a  $4\frac{1}{2}$ -inch telephoto. FIG. 6



SHORT FOCAL LENGTH or wide angle lenses increase the size of field. Picture at the left taken with a standard (1" lens or 25 mm.) lens. Frame at the right taken with lens of 15 mm. focal length. FIG. 7





USING smaller lens opening brings more of picture into sharp focus. FIG. 8

## 'DEPTH OF FOCUS' INCREASES AS LENS IS STOPPED DOWN

adverse and unusual lighting conditions—that is, where he will use the lens wide open a great deal of the time. The serious worker naturally wants his movies sharp and clear in detail, and the variable focus lens has the advantage of greater flexibility in many situations.

The beginning cinefan probably will get the best results from the fixed-focus type of lens mount. Distance measuring and estimating would slow him down and only add to his difficulties, and it is likely that his first results will be better and sharper with a fixed-focus lens.

It should be noted that a variable focus lens can be used as a fixed-focus lens merely by keeping it set at the 25-foot marker.

**Interchangeable Lenses.** With some cameras you are able to remove the standard lens and replace it with special-purpose lenses of shorter or longer focal length. As stated in the discussion of lenses, focal length determines the size of the image in relation to a given distance of the subject from the camera. Lenses with focal lengths longer than the standard one inch (in 16 mm cameras) are known as "semi-telephoto" or "telephoto" lenses. They vary from two inches to six inches, and magnify in direct proportion to their focal length. Thus, an object taken with a 3-inch lens would be three

times as large on the screen as an object taken with a 1-inch lens, although the distance from the camera remained the same. Naturally, the field covered by the telephoto

lens is smaller than that covered by the standard lens. The long-focus or telephoto lens is used to make close-ups or semi-close-ups of objects some distance from the camera. It is useful in making shots where it is impossible to get closer to the subject to be photographed, as, for example, sport shots from a grandstand. It has a further usefulness for "candid" shots of camera-shy persons or children who become tense and unnatural when aware that their picture is being taken. Figure 6 shows the relative fields covered by the standard lens and by a 4½-inch telephoto lens.

The telephoto lens is also useful in making extreme close-ups of flowers, birds, and small objects—letting them fill the screen where they would be only a part of the picture if taken with a standard lens even at the closest possible limit of sharp focus.

In making telephoto shots, a tripod is almost a "must". The camera should be firmly supported, as the slightest movement is magnified many times in projection on the screen.

Another accessory lens available if your camera allows interchangeable lenses is the short focus, or "wide-angle", lens. (Wide-angle lenses for 16 mm cameras have a focal length of 15 mm. They are not generally available for 8 mm cam-



eras.) The wide-angle lens includes a greater area than the standard lens at the same distance from the subject. Of course, all objects become relatively smaller. The wide-angle lens is extremely useful in crowded quarters where it is impossible to back up to include all of the subject in the picture field; for instance, taking a tall building from across the street, or interior shots where you can't get farther from the subject because of the walls of the room. (Fig. 7.)

The wide-angle lens remains in sharp focus at extremely short distances. This permits the camera to be brought closer to the subject. It is therefore also adaptable to one of the uses mentioned for the telephoto lens—the photographing of small objects to make them fill the screen area.

**Turret Head.** Some cameras have their interchangeable lenses mounted on a pivoting turret head, which allows instant change-over from one lens to another. (Fig. 5.)

Interchangeable lenses are useful but are not a necessity in average home movie-making. It is doubtful if the beginning cinefan would make much use of them until after he has mastered the rudiments and becomes more critical and selective in his shots. Only the advanced cine worker considers interchangeable lenses a necessity.

**Camera Speeds.** Silent movie projectors (16 mm or 8 mm) show pictures on the screen at the rate of sixteen frames (separate pictures) per second. So that action will appear normal on the screen, films are exposed in the movie camera at this same speed. The exposure time of each frame is, of course, the same, though varying somewhat with different cameras.

In some cameras you can increase or decrease the number of frames exposed per second, affecting both the shutter speed and the apparent action of the subject when the film is projected at the normal projection speed.

Taking pictures at half-speed, or 8 frames per second, doubles the length of



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exposure for each frame. This is extremely useful in making pictures under adverse lighting conditions. Remember, however, that you are also *speeding up* the action, so if possible your subjects should act rather slowly and deliberately, so that the action will appear normal when shown on the screen, unless a trick effect of very busy, jerky, fast action is wanted.

Speeds faster than normal—32, 48, and 64 frames per second—are used to get a screen result known to all: "*Slow Motion*." Primarily a trick shot, it is seldom required in the average home movie, although it does have a definite value in the photographing of sports—golf, tennis, swimming, diving, track events—where its occasional use in the study of form can be interesting and valuable.

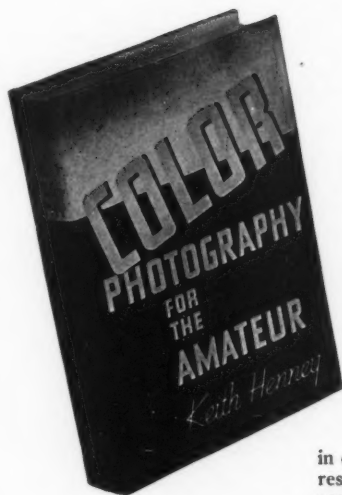
As the amount of exposure varies in inverse proportion as the number of frames per second is increased, it is necessary to open the lens to a larger stop when filming at slow-motion speeds. (See Fig. 3.)

**Extra Features.** Magazine loading. Some cameras are equipped to use a film magazine, which is slipped, ready-loaded with film, into the camera. The big advantage, beyond extreme ease of loading, is the possibility of changing from one film to another (as from black-and-white to color, or from slow fine-grained film to ultra-fast film) simply by exchanging magazines. The use of magazine loading somewhat increases film costs.

**Single-frame Exposure.** This device is used mainly for trick shots, which will be covered in a later article. You will want it if you are ambitiously planning to make animated movies with cartoons or miniature sets and figures. Animated titles are particularly effective, while animated charts, maps, and diagrams liven up the travel film and films of a more serious nature.

(NEXT MONTH: The second in this series of cine articles, "*Shooting Your First Roll of Film*.)

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